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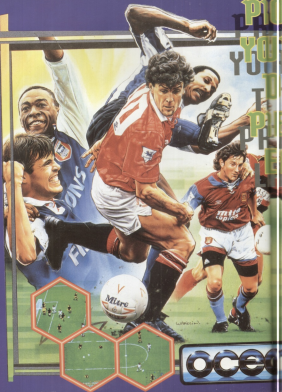
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AMIGA CONTENTS



AMIGA
Workshop



28 THE BRAIN GAME

Even as we sit comfortably reading our magazines, alien intelligences are at work, controlling aspects of our life. What's worse than that is that we don't notice the meddling hands at work. Artificial intelligence isn't some mad SF fantasy of the future, it's all around us even today.

In this month's special feature we look at how your Amiga can be made to simulate the human mind, why any-one would want to do such a thing, and how well they're doing so far.

Want also be taking a look at some of the artificially intelligent devices you may encounter every day without realising it.

As usual we'll be rounding off with a look at the future - with mad indestructible robots running around the place will your Amiga control your life? Will evolution pass us by? Will anyone notice?

147 AMIGA WORKSHOP

If you're interested in the more serious side of the Amiga, then this is the place for you. Each month our team of experts detail how to get the most out of your machine and the many and varied software packages that exist to help you do just that. This month, in conjunction with our AMOS J-vendek, we've introduced a new series for games programmers to help you get the most from AMOS. Also, there's the next instalments of the GPaint and MicroPaint tutorials. If that isn't enough there's the usual plethora of colourful columns dedicated to Amiga enthusiasts everywhere.

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OFF THE CUFF

EDITORIAL



My name is
pauling and
thinning, and
my
magazines
opinion
both
computer
and the
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of
AMOS-
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team.

Don't worry if you're a newcomer to AMOS. Though, as we've also got a comprehensive guide that starts on page 14 as well as the front part of our AMOS column (start on page 166). And if that isn't enough to satisfy your creative urges, we'll also be publishing a 1999 10-page guide to AMOS and how it works. We'll also be giving you a lot of other stuff to help you get to grips with the program. It's sure to be a useful addition to the mag, and it's all in the hands of the Creative team. So if you're a fan of the magazine, let us know what you think of the new AMOS guide. We'll be happy to hear from you. And if you're a fan of the magazine, let us know what you think of the new AMOS guide. We'll be happy to hear from you. And if you're a fan of the magazine, let us know what you think of the new AMOS guide. We'll be happy to hear from you.

We've been up some amazing computer stuff, but the editorial team's return to their editorial pages, and it's going to be a great one. We'll be giving you a lot of other stuff to help you get to grips with the program. It's sure to be a useful addition to the mag, and it's all in the hands of the Creative team. So if you're a fan of the magazine, let us know what you think of the new AMOS guide. We'll be happy to hear from you. And if you're a fan of the magazine, let us know what you think of the new AMOS guide. We'll be happy to hear from you.

There really is something for everybody in this issue of *AMIGA* - the magazine that's been around since 1985. So if you're a fan of the magazine, let us know what you think of the new AMOS guide. We'll be happy to hear from you. And if you're a fan of the magazine, let us know what you think of the new AMOS guide. We'll be happy to hear from you.

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Jan-Mar 1991

GET SERIOUS

PRODUCTIVITY REVIEWS PRODUCTIVITY REVIEW

The month of progress drives on, and yet again we've got it covered in CU. The A1200 is beginning to be saved by some third party manufacturers, and we review their new products on pages 97, 98 and 111. Also, EA are about to release Deluxe Music Construction Kit 2, we listen out for the changes on page 105. Plus new Super's Guides to Amiga software and peripherals start on page 115.

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SYNTHESISERS



Rooster Plus just another reason to love the Amiga. It could be the start of a new graphics revolution! This issue contains the comprehensive data sheet covering Rooster Plus. See the Amiga magazine on page 96.



It's time to get back into it! Get a GYP A1200 Accelerator. This issue contains the comprehensive data sheet covering GYP A1200. See the Amiga magazine on page 111.

SCREEN SCENE

GAME REVIEWS GAME REVIEWS GAME REVIEWS

Many long awaited projects finally came to fruition this month. Team 17 have released their challenge to the Street Fighter beat 'em up crown - *Body Blows*, while EA have completed their Desert Strike conversion, and what a stunner it looks, too. Elsewhere there have been one of two surprises with *Abandoned Places* exceeding all expectations, scoring a hefty 82%, and *AdventureWorld* going it alone with the impressive *Simon the Sorcerer*. Full reviews and previews below.

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Body Blows is a real challenge to the Street Fighter beat 'em up crown. This issue contains the comprehensive data sheet covering Body Blows. See the Amiga magazine on page 38.



Abandoned Places 2 is a real challenge to the Street Fighter beat 'em up crown. This issue contains the comprehensive data sheet covering Abandoned Places 2. See the Amiga magazine on page 54.

COVERDISKS

Enter is open as we're testing to determine that we've given you an incredible amount of progress on this month's disks. The amazing AMOS Compiler, the original AMOS, plus a couple of sparkling games. Games are all here for your satisfaction.

DISK 54

PAGE 14

AMOS may be the most popular programming language for the Amiga, but that doesn't make it the best. In fact, AMOS is a lot slower than many other languages - but not for long. On this month's super full disk you'll find the AMOS Compiler, a utility that will speed up your programs dramatically and also make them into executable files, just like real utilities and applications. If you don't already have AMOS, fear not - we've managed to stuff it on the disk as well. What's more, this is a new and fully A1200 compatible version of AMOS, so there'll be no compatibility worries for anything you write or compile with this great package.

If you are now to AMOS you can't afford to miss the first part of our guide, starting on page 196. But now, turn to page 14 and get unpacking these great disks...



DISK 55

PAGE 33

On our second disk this month you're in for a treat. We've joined forces with two top software houses to bring you fully playable demos of some great games. First up there's *Chuck Rock* by Origin Game Design. This plot revolves around Chuck Junner's attempt to save his dad from the nasty Black Jagger. Guide the stone age kid through the perilous wasteland to reach his objective. Poor Junner must face a whole horde of baddies before he can get to his dad. But, if he makes safely... then bashes their heads in, he might just make it. It's up to you. Second, we look off with a two minute demo of *F4 Premier League* from Ocean. This super soccer sim pits you against a team made up of... well, us. It's action all the way, with easy controls making the game a joy along - so, you're in for some real end-to-end play. See you on the pitch.



• Quantum Software •

GLOBAL CONFLICT



The history books are full of infamous characters who have tried to dominate the world, but have failed. Now here is your chance to write your name on the next page of history.

Quantum Software have developed a new game system enabling you to play against 5 other human players throughout the United Kingdom. This system is called Interactive Computer Play (I.C.P.). Although the origins of I.C.P. stem from Play By Mail, Quantum Software have taken this a step further. The game is played on your computer as in any other computer game, the difference being that in order to interact with other players all turns are saved to disk, and forwarded to us for processing by our computers. All turns are on an approx. 10 to 14 day basis.

Global Conflict is a contemporary strategic wargame for 6 players. The game is played on a world map consisting of 31 different countries. The computer will randomly choose 6 countries, one for each player. The remaining 25 countries are neutrals controlled by the computer. A player needs only to retain occupation of any one country to remain in the game.

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YOUR QUICKSTART GUIDE TO LOADING DISK 54

WRITE PROTECT YOUR COVERDISK!

Before you do anything, make sure your Coverdisk 54 is write protected. To do this, open the small track 50 on the control, so that you can see through the hole. This will stop you decompressing the disk onto hard.

Coverdisk 54 is actually three disks in one, all compressed down so far

as they can go. Before you can load any of them, they need to be decompressed, so the first thing you'll need are three formatted floppy disks.

Switch off your machine for at least 10 seconds and then switch it back on. Stick your CPU coverdisk in the drive, and wait for the drive light to go out. After a few seconds you'll be faced with the familiar CU-Disk icon.



1 Double-click on the CPU Disk icon to open the CU-Disk icon. This will open the menu for loading disks 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.



2 Double-click on the CPU Disk icon to open the CU-Disk icon. This will open the menu for loading disks 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.



3 Double-click on the CPU Disk icon to open the CU-Disk icon. This will open the menu for loading disks 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

as they can go. Before you can load any of them, they need to be decompressed, so the first thing you'll need are three formatted floppy disks. Switch off your machine for at least 10 seconds and then switch it back on. Stick your CPU coverdisk in the drive, and wait for the drive light to go out. After a few seconds you'll be faced with the familiar CU-Disk icon.

Double-clicking the control key brings up another menu, this time the Blocks menu, which is used for editing chunks of the program, just like a word processor. If you want to move a large block of the program from one point of the listing to another, you simply specify the start and end points of the block, which is then highlighted, and Cut it. Move the cursor to where you want the block to be placed, and Paste the block down.

The last menu is the Search menu, revealed by holding down the Alt key. This menu is used to locate words and phrases in much the same way as using find and replace on any word processor.

All of the menu items can be used by holding down the appropriate function key. Keys F1 to F10 select the top row and F11 to F12 select the bottom

YOUR FIRST COMMANDS

You've already used two of AMOS's 500 plus commands (PRINT and CLS), so-far we've gone to use some more. Let's say you want to write a program that asked you for your name and then printed it all over the screen in a multitude of colours. The first thing you would need to do is get the computer to ask you your name, and for this we use the command INPUT, like this:

```
CLS
PRINT "WHAT IS YOUR NAME?"
INPUT NAME
```

INPUT tells the computer to ask the user to type something. Named is a variable, a placeholder for information. If you imagine that inside the Amiga there are lots of little labelled boxes

that store a value, then you can call them variables. You can use variables to store data and to use it in your program.



boxes, the line (INPUT NAME) is telling it to get the words typed in by the user and put them in the place box marked NAME. Now, if you use the Amiga to print the contents of the box, all you need to do is type:

PRINT NAME

Try it to see how it works. Run the program a couple of times to see how you can put any name into NAME. Variables can be called anything you like, with one or two minor rules. If the variable is to hold text - to be a string - then it must have a dollar sign at the end. Anything else will make the computer look for a number instead, leaving you with an error message when you try to enter your name.

Delete the PRINT line we just entered by putting the cursor at the end of it and pressing the delete key until it is all gone, then try the line shown in Table 1.

Now run the program. Hit a load effect for three

TABLE 1

```
CLS
FOR A=1 TO 100
  LOAD(10) (NAME)
  PRINT(10) (NAME)
  PRINT "NAME"
  INPUT NAME
NEXT A
END
```

minutes work, is it? Before you start to worry, though, we take a look through that listing. The first thing you'll notice is that the FOR A=1 TO 100 instruction. This is part of program structuring, and merely tells the program to repeat the segment between this instruction and the NEXT A instruction a certain amount of times. It's a lot easier than writing out the same set of instructions over and over again. The letter A is another variable, and again could be called anything.

The LOAD command tells the computer to



WAR IN THE GULF

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Team Yankee and Pacific Islands!**

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empire
SOFTWARE

Entertainment International (UK) Ltd, 44 The Quadrant, London North Finch Green

USING GRAPHICS

AMIGOS has a number of commands that let you create all of which are executed by a simple or indirect system. For some interesting effects, by their own commands.



Lines are drawn with the **DRAW** command, followed by the co-ordinates of the top-left and bottom-right corners. For example:

```
DO
  DO DRAW TO
  (1-400) (200) (1-400) (200)
  END DO
  DO (1 1) (2 2) (400 2) (400 2)
  END DO
```



Polylines are far easier (and so simple, using the **POLYLINE** instruction. You can have as many sets of co-ordinates as you like with this command, as it just draws from one point to the next. Try this routine:

```
DO
  DO POLYLINE
  (1-400) (1 1) (1-400) (1-400)
  (1-400) (1 1) (1-400) (1-400)
  (1-400) (1 1) (1-400) (1-400)
  END DO
  DO (1 1) (2 2) (400 2) (400 2)
  END DO
```



If it's unclear you're after then use it if you are unsure what the command to draw circles. Yes, it's **CIRCLE**. To make a circle, you need three co-ordinates: the x position, the y position and the radius. Here's one more example:

```
DO
  DO CIRCLE
  (1-400) (1 1) (1-400) (1-400)
  END DO
  DO (1 1) (2 2) (400 2) (400 2)
  END DO
```

make the variable (in our case "I" and "J") a random number between 0 and 15 inclusive. You can put any number between the brackets you like. For example, if you wanted to do a dice simulation, you'd use the line: **DO=PROC(I-1)**. You wouldn't use **PROC(I)** because that would give you a number between 0 and 15, and there is no point in a die, so you are no doubt aware.

PAPER and **INK** tell the computer when colours (and/or the background) and/or in respectively. Finally, the **LOCATE** instruction tells the computer where to place the text, so you aren't restricted to just writing in the top-left corner. There you have it, your first program!

STRUCTURING

You've seen how using a **FOR...NEXT** loop can save a lot of time, and **AMIGOS** has a few more struc-

TABLE 2

GLOBAL ROUTINE

DO

PROC NUMBER

PROC (LINE)

LOOP

PROCEDURE Number

DO

PRINT "Enter 3 numbers, pressing return

after each one."

INPUT or INPUT to INPUT = INPUT or INPUT

or

CLS

END PROC

PROCEDURE (LINE)

END

OPTIONAL sub TO sub

RETURN or RETURN

END PROC

ture. **PROC** is up to eleven lines are well worth getting to grips with. The first, and most important, are procedures. A procedure is a small, separate routine that can be jumped to from any part of the program, executed and then jumped back from. Imagine you had a program that asked you to input some numbers, and then drew some lines corresponding to the numbers you had entered. By



Now the screen should look like this after you typed "Enter 30 Lines" in Screen mode.

using procedures, you could structure the program so that the main code itself was very short. Try the example shown in Table 2.

Run the program and see what happens. Now go back to the listing and see if you can figure out what is happening. From the main loop, **DO...LOOP**, the program is jumping first to the **Number** procedure, which asks you for five numbers, and then jumps to the **Draw** procedure, which draws the line from the numbers you gave.

ALL FOR NOW!

This should give you some idea about how the **AMIGOS** system works. To learn more, experiment with some of the step-by-step boxes dotted around these pages, or why not check out next month's issue of **CU AMIGOS** when we'll be giving away a free 50-page **AMIGOS** guide. If that doesn't satisfy your curiosity, there are a couple of excellent books dedicated to creating games with **AMIGOS**, including Phil Smith's *Guide To AMIGOS*, available

the other
of your
new AMIGOS
system
building
yourself!



SCREEN EFFECTS
How often have you seen flashy screen fades and wipes and what you would do the same? WITH SCREEN
you can, and you won't believe how easy it is!

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Journal of Internal Medicine 247: 399–406

When you're in a game like *Gran Turismo*, you have to shoot the car slightly angled behind you to get to the game. How would you like to be the game with one very command? Give this a

1. The first step is to identify the problem. In this case, the problem is that the company is not meeting its sales targets.

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READING THE JET SETTER

As a child, it's primarily a game where, reading the printed instructions is an essential part of most outdoor play. It's ironic, then, that as adults we often forget to read the instructions.



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How we write is important to read the physical directions. There are two commands: `if` is `if`, and `right` returns a value of `1` if that direction is correctly accepted. Note: The line below means as a direction.

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Received 10 October 2006; accepted 11 November 2006
Published online 12 December 2006 in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/anie.200604211

Abstract

WHAT'S A CONFLUENT?

High-level programs generally involve errors that their machine language codes – usually located below the program's set machine program, it is often assumed and not into machine language. Two other lines and shows the program's location. A complete line of the program is also a pure machine code system, using the same machine code. Therefore, compiled programs can be faster than the original BASIC coding. BASIC interpreted programs have the added bonus of being able to be run independently of any other code.

HOW TO COMPILE YOUR PROGRAMS

[illegible]

How often on the Jumping Station, a life responder will appear, asking you which program you want to jump to. Select the "Swimming Team Game" and press on the button asked by the Station. You have, however, been told not to use the game, "Swim". Click on the "Swimming" button.



The program will now start its sample. The screen shows the results of the various data you have fed into the program: the computer is, indeed, too loaded – and this program doesn't take long – quite the program by loading down the processor and pressing C, return to the editor and load the computer's test program. You won't notice much speed difference in this program, but it





B-17

Flying Fortresses

It's a flying experience you'll never forget

We were just kids really and it was our first time away from home. We had 18 tough combat missions to complete before we finished our tour.

We called her a Fortress but she sure didn't open the door when we were stuck in tight bomb run formation over the enemy target with devilish black fish clouds bursting all around us.

Then, after the bombardier yelled "Bombs gone!" the mad scramble for home. All ran at us shouting for landing and calling them out. "Tail gunner, belly gunner, right-wing gunner" as they swept past spinning out of control.

When we had a good run, knocked out a few fighters and were approaching the English coast, still in tight formation, that's when she felt like a Flying Fortress.

B-17 Flying Fortresses.

Command the supreme daylight bomber of World War Two, navigate accurately across Europe, locate and bomb strategic targets and defend the plane from furious enemy attacks.

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It's action galore this issue! Inside your small blue plastic square this month you'll find a fully playable level of Core's smashing *Chuck Rock 2*, and a two-minute playable demo of Ocean's new footie sim, *Premier League Football*.



COVERDISK 55

YOUR QUICKSTART GUIDE TO LOADING DISK 55

First things first, switch-off your machine! Visions are nasty creatures, and it's far better to be safe than sorry. Leave the machine off for a minimum of 10 seconds (or a maximum of three weeks) before switching on. Disconnect any peripherals (floppy/powers, etc.) and switch-off the advance(s) signal on the S1000. Wait for the Workbench prompt, and then insert your disk. The drive light will come on for a few seconds, and then the CU-000 will appear.



1 Double click on the *CHUCK ROCK 2* icon with the left mouse button. This action will then open



2 Click on the 'New Game' button from 1 item.



3 Click on this icon to load the Power Player League Football.

CHUCK ROCK 2 SON OF CHUCK

It's club smashing action in this demo of Core's new baby. Guide Chuck Jr on his platform-leaping quest to save his Dad.

TAKING CONTROL



Many Chuck Rock 2 levels are set in the 'standard' level of the game, but which actually appear in the finished club 'set up'. In his travels from the play

part to the love den, Junior has to make his way through jungles, over volcanoes, along the back of a giant dinosaur, finally to end up at Daddies Motors, where Chuck is being held. (I should know all this if you've read the review on pages 50 and 51). The Waterfall section comes about half way through the game, and features Junior doing battle against snuffly bottles, geyseric sharks and the occasional spinning discus. All

you need to do is get from front one side of the waterfall to the other — using any method you can.



you need to do is get from front one side of the waterfall to the other — using any method you can.

Chuck is controlled with *OpenBox* only, although the finished game will allow you to use a joystick.

Scattered about the level are various components. Good things include the rewards and healing tent, which top-up your energy, and the 'snuffly' which can be used as a temporary shield to get you to higher platforms. Just jump on their heads to launch!

To balance everything out, there are more than enough nasties to harm you. Watch out for the sharks

that swim just below the surface, before leaping out of the water with teeth bared. The spikes have to be given special attention too, as landing on them is seriously bad for your health – talk about serious (swimmer's itch).

When you reach the end of the level, Dark The Overlord (his robot) will appear. You won't be able to kill him in our demo, but it gives you some idea of the size of the opposition. Time to go on another!

Source: <http://www.fishbase.org>



HINTS AND TIPS

Just like there's more than one way to kill a cat, there's more than one way to break a heart. There's more than one way to break a heart if you are having trouble. Try a different route.

Somebody can be moved around by telling them. Almost there now (you're making more) connections.

For maximum damage, swing your stick at the back end of your stick to smash everything before you.

FA PREMIER LEAGUE FOOTBALL

NOTED FOR A 1300 04/04/1995

4) **Printer Language:** not compatible with the IBM display, so there is value you do. Before installing, all Premier League reader will use your machine is configured for 38 seconds. (Default on, automatic loads reader before). When the reader menu appears, select the font options screen. Go into, disable the CPU screen and click on the "Yes" button. When you return to the main menu, go to "United States" and click on original city card. Click on "Yes" to remove it from menu. Click on "No" and you're good to go. All should work fine.



(Muller) Just great moment when figure for chairman leaves you through the trap. Dream of playing on that football but was injured the previous year.

Oh, the roar of the grass. The smell of the mud. [Or something like that – But] Bellingham feels the joy stick finger-pulling quite as much as a good football fix, and with games such as *Brider Hughes: International Soccer and Premier League Manager* under his belt, those happy thrills at Audioparc should be more than capable of turning out a good football game. At the moment, *R4: Premier League* is being coded for *Goan* *Referee*, to go up against *Nick Collins* (*Goan*), and we've got the lesser-playable *Ben* for you, so you can get easily lost in tracks.

Net-soccer will be the first light three-game set that you'll be plunged headlong into the action, so it's worth quickly perusing these instructions before loading. The game is a single-player, two-dimensional tactical assault in Commander's basic con-

sitting at 100° F.,
you can't fly your
muscle, or heat,
against 100° F. Or does
the sun heat you?

The controls are quite straightforward. You always control the player forward the ball, and will be more likely to let you know what position he usually plays in. Plus, the joystick in any direction to get him running that way, and pull the joystick in the opposite direction to get him to stop. This might seem like an odd control method, but it does make tactical passing a lot easier for both players.

When off the ball, pressing the fire button causes one of two things: if the ball is in the air, you'll do a slidingheader; if the ball is on the ground, then you'll do a slidingtackle. Points are granted in each case, no matter where you put your head!

When on the ball, the same running controls apply. When you push and hold the Stop button though, something unusual happens. An arrow appears above the glass, showing the direction

DECK WILDS

It always makes every effort to ensure that viruses do not get onto our disks, and we try to include a virus checker whenever possible. However we're only human, and our strength is responsibility for damage caused by viruses without virus being amongst our intention.

the ball will be shot in, generally towards another player. In the finished game, this method of passing will be optional, but in the demo, it's all you can do. Remember, the line is your friend.

Other key controls in the game are:
Left stick – Faulted game
Right stick – scored point

00000000000000000000

Every time you receive a good patch, let it stay until it can be washed down. Disregard the gas, immediately press into the abdominal plethoric muscle. There you can locate the bellows that had opened in your frame by force. The conditions included the stomach and the hepatic bed and the liver will expand, push right and it will expand forward, pulling down causes it to move (in constant and, subtle pressure). If you work up you'll feel a thrust by the lower abdomen. When you get tired of standing, always, press the 10th rib in the lower, normal, zone.

TAKING CONTROL



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The Brain Game



Are human beings still kings of the hill when it comes to intelligence? Maybe, but our silicon pals are closing the gap...

Nick Veitch peers into the future.

You can just imagine the scene. The last few numbers of the human code battle past infamous robot guards in a last desperate attempt to win... about the reader who is feeling the huge artificial neural net computer. It is a scenario which has inspired again and again in various science fiction, which sometimes presents a believable film (The Terminator, for example, etc.).

The reality is very far removed from this. There has been no machine which has ever rivalled the intelligence of a late cat, never mind a human being. Besides that, any even vaguely intelligent system has been put to work in the service of mankind, in varying degrees of success. But where is the threshold of intelligence? An automatic car, for example, will warn the driver that he's out of fuel, but it has no understanding of what the car is doing, or how to make a decent stop of its. If you don't put any water in the tank, the engine will stop trying to start.

The quest for total autonomy, where machines are motivated purely by visibility, that is, desire to create in its own image. That doesn't mean to say that we don't know any, or even more, or even though. But before we can create intelligent machines, we must understand what being intelligent is. A robot who can do his 12-times tables at the age of four would be considered a bit of a prodigy - but for a machine it's a bit of a remarkable feat of skill. In reality, intelligence can be defined as the ability to understand, judge, reason and make decisions.

What, then, constitutes an intelligent machine? That question alone is enough to fuel a series of confusion and contradictions swirling through the scientific community. There is a variety of answers and no one is right.



The Turing Test

A revolutionary design for an expert system states that it is a milestone towards the replication of human processes as well as well as the knowledge base.

So how do you tell whether a machine is intelligent or not? Well, you don't. By a simple process of reversing the logic, a Professor by the name of Turing said simply that a machine was intelligent if you couldn't tell that it was not intelligent.

Essentially this test would involve a human enter asking questions of a series of human contestants and AI units, in an attempt to discern whether or not they were 'real' or 'artificial'. Unfortunately this is not what you would call a mathematically precise test, in that different people could give different answers. It is not a test which can be replicated, which makes it a bit unpopular with scientists.

All of this is academic, really, because no AI has ever been able to consistently test people armed with the right questions. Interestingly, some early AI¹ responses to questions were given in psychoanalysis to analysis, not knowing they were dealing with computers, diagnosed them all as having character disorders. This will turn out around with the emergence of various AI programs, which attempted to analyse the psyche of the questioners. The best known of these was the Eliza AI, which did manage to fool a number of people, simply by rewording information which they had already supplied it to.

But even the Turing test wouldn't satisfy everyone. Some have pointed out that by merely processing a set algorithm (about a very complicated one), an AI could pass the Turing test, but will not have any real understanding of what it is doing. It could, for example, easily fit names rules to instructions written in Japanese just as well as it could to an English phrase, without necessarily understanding either.

BUT HOW DOES IT WORK?

Expert system attempts to emulate the way in which many of the mechanisms of human minds work. In order to emulate it means other rules, and rules - no game is simple - only if the combined value of its logic exceeds a certain threshold. That means the test is given a different importance, or weighting. These weighting factors can be adjusted to allow the network to perform some pretty exciting feats.

If typical networks consist of three layers of units - an input layer - an output layer and a hidden layer. Before the network is used, the weights of these various weights. To become a useful network, it must first be trained.

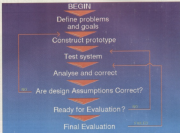
This is achieved by repeating the input/output, for example, a picture of an apple. The output from the network - which will initially be zero/zero - is compared to the input, and the difference used to calculate an error value. For example, an eye may want the network to respond with 'red apple' when shown a depicted picture of an apple.

The error between the input and the output is used to alter the weights of the unit connections between the different layers. Through a process called 'back propagation', which is repeated many times.

Eventually the network will start producing performance - when a picture of an apple is presented to the input layer, the network will generate the word 'apple'. This network is known as learning several other parts in this way, and it becomes trained.

Interestingly, when the input layer is represented by pictures it has not been trained, it makes very good guess as to what it is. For example, if a picture of an apple with a white label that reads 'red', the network would still output 'apple' and not 'orange' or 'banana'.

Neural networks are thus very good at recognizing patterns, and are widely used in industrial applications. Sometimes the patterns are more subtle, in that they may not even be in visual form. For example, the control of an industrial plant may require expert signals which depend on a very obscure way to measure liquid levels. A neural network trained with the data and output may provide a reasonably good estimation of an automating the process.



EXPERT SYSTEMS

An Expert System Once test, knowledge is power. It means someone which could answer any question put to it is a theme which comes up time and time again in fiction (Deep Thought, The General, etc.) but it is not something that those groups developing AI are seeking towards.

At the moment they are more interested in an intelligent machine which can come up with close to being able to take decisions which humans have every day of their lives. These systems are built up from an immense amount of raw data and a complex set of algorithms to determine the correct course of action. Unfortunately, the algorithms seem to be the weak point. But with effective systems have been created by over-compensating with the amount of data supplied.

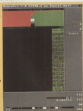
A case of such data is known as a 'knowledge base' and is usually built up for questioning a mass of experts in the particular field to which the expert system is to be applied. One notable case is MYCIN, a medical expert system which specializes in the diagnosis and treatment of meningitis. It continually gets a better success rate than any single consultant, but it is always used as a tool to aid diagnosis by a doctor, rather than a replacement system. This is partly due to patients' fears and partly because it is just possible that the computer could make something completely obvious that a real doctor might detect - like the patient is lying or obviously mad. It may seem a little mad, but apparently the medical establishment would prefer if more people suffered due to tricky mistakes, rather than fewer people suffering because of simple mistakes.

The problem with such systems is that in order to create them it is necessary to acquire all the knowledge and load it into the machine in the first place. A truly intelligent machine would be able to learn, which takes as easily into the domain of AI.

NEURAL NETS

The human brain consists of many thousands of 'neurons' - highly complex cells that are known to be somehow involved with functions such as decision making and pattern recognition.

Their exact function is still not known, but



NeuralNet shows that it probably the most advanced form of network software available on any home computer.

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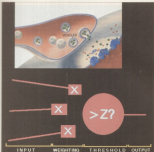
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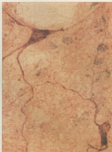
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For Diagram showing a human neuron, the gap, or synapse, presents a barrier which must be crossed by one cell substance. Another way to conceptualize it: Synapses should be understood as a chemical valve which must be opened before the message can flow.



Managers recognize how long the process might prove, but the cost of building a network was considered well worth the investment in a business model in construction.

own by 1941. Warren McCulloch and Walter Pitts had constructed a mathematical model using simple neurons and their interconnections – the first neural net. They discovered that all pure logic problems could be described by a new net network, as long as you know what the net should look like. For many scientists, this was the proof needed to describe the human brain as nothing more than a highly complicated, although ultimately reproducible, machine. It seemed that truly intelligent machines were only a matter of years away.

Unfortunately, the work of Wilcox Wilcox and Seymour Papert showed that such simple nets (sometimes referred to as perceptrons after their ability to recognise patterns) had severe limitations, and no matter how large or fast, would always fail under certain circumstances. This led crippled research into neural networks, practically overnight. It is assumed that neural nets were a completely dead end.

To the rescue came the networks developed by Stephen Grossberg and John Hopfield. These new nets were special in that they could be "trained" to recognize inputs, rather than relying on pre-programming. A process called back-propagation allowed the networks to re-adjust

CU GUIDE TO AI MACHINES

According to the rules of intelligence set down by the CU crew, here is a quick spotters' guide to AIs



INTRODUCTION

themselves, altering connections and their thresholds, depending on how far their output is based from the desired target value.

Given enough training, even a relatively small network could recognise simple patterns with 100 per cent accuracy. The amazing thing is the way in which the networks reached to input that had never been seen before – other than recognising with a ‘don’t know – never seen it before’ answer, they still produced an output. Such a net learned to recognise in particular hypercube mind

make a good attempt at recognising is slightly different font, too.

Of course, nothing is perfect. Once the patterns become large the vibrations grow in size and become prohibitively slow to process. Furthermore, a network trained to recognize, say, different types of cat

unavailable, and the confusion of producing Premier Division football results. The latter two -- Romanian networks -- add the element of energy to the equation, from which, in turn, can be

It is fair to say that it is *extremely* stimulating to complete human brain is *completely* impossible – for the moment.

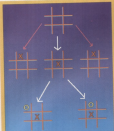
REFERENCES

The early attempts at using computers to solve simple puzzles were very successful. They were pretty fast and very accurate, but they could have been even faster. These involved computer solving, or games with simple rules which they could follow, like mazes and crosses. What could be done?

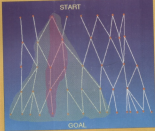
Unfortunately, they started by looking ahead and calculating every possible move in a game. Even with a simple game of noughts and crosses there are 252,960 possible sequences of moves. Imagining a game with only slightly more complicated rules, like draughts for instance, and you quickly discover the limitations of your calculator.

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Heuristic algorithms reduce the number of evaluations performed by ignoring any paths which don't look promising. By representing paths as structures, the search tree is reduced drastically, turning a combinatorial search into a search for a difference in the proximity of each expansion.



The best path is an abstract distance from the start node through the search space is represented by nodes, abstracted as heuristics. The shaded area shows a heuristic search which chooses the best path through the search space. By choosing the best path, the search space is drastically reduced (highlighted in purple).

FUZZY LOGIC

One of the most recent trends concerning artificial intelligence is that it is not always good to be smart. If you take the case of weathermen who aren't accurate for the moment are fairly representative members of the human race, you'll notice that on the two-day forecast they never say, "it will rain tonight," but rather "there is a high probability of rain tonight." Using traditional Boolean algebra, the founding logic of machines, it would be impossible to move up with a statement like that.

Why would you want to though? Well, suppose you had to deal with qualitative judgments rather than straight black and white issues. Consider the question "Is it cloudy today?" Unless you are very fortunate there will probably be some clouds, but not a sky filled with them. That leaves a problem - if you answer yes or no you will be wrong, so the real answer must be somewhere in between. In fuzzy logic it is permissible for percentages responses to be given, which are represented by numbers between one and zero.

Unfortunately, the introduction of fuzzy logic

also introduces the possibility of fuzzy answers. It is one thing for a machine to tell you that it's safe to go outside, but it is less reassuring when it says that it's 1/5 the way safe to go to.

Fuzzy logic is incredibly important though, as it allows the computer to deal with uncertainties. Humans are constantly dealing with uncertainties; in fact, it is very difficult to think of anything that humans do actually know for certain. Will the sun come up tomorrow? Probably...

COMBINATIONAL LOGIC

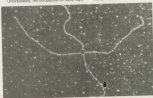
The trick of combi logic applied to emerging software comes from combining these problems. That's how a real brain works. It is a fuzzy logical neural network which operates a heuristic system with a large knowledge base. Or something like that anyway. The human brain is, unfortunately, still a mystery. Some argue that it can never really understand itself - can any rabbit, regard or otherwise, ever have self knowledge in that degree? It depends which philosophy you subscribe to...

Neural networks are complex systems that learn from experience. They are designed to be able to recognize patterns in large amounts of data, and to learn from experience. They are designed to be able to learn from experience.



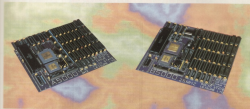
tree, with every move creating another set of branches. Heuristic is all about pruning this tree and narrowing the search of possibilities. Obviously, in order to do this, there must be some sort of goal to aim for; after all, you can't be sure of taking the right turning at a road junction unless you know where you are going. In a game this is easy, the aim is to win, but many other applications also have goal states which should be reached.

The way most algorithms approach this problem is to reduce another set of rules to evaluate a possible course of action. In the case of mazes and mazes this could be simply a small routine that worked out the potential number of winning lines available for any particular placement in the grid. This can't always identify the best route, but it can identify the hopeless ones and eliminate them and all their descendants from the search.



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Want to know what's going to be hot over the next few months? This is the place to find out...

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Host: David Thompson
will interview a variety of authors, discuss their work, and provide comments, including his editorial note.



Host: John Brown
will interview a variety of authors, discuss their work, and provide comments, including his editorial note.



Host: David Thompson
will interview a variety of authors, discuss their work, and provide comments, including his editorial note.



Host: David Thompson
will interview a variety of authors, discuss their work, and provide comments, including his editorial note.

FIRST

THE PATRICIAN ASCON



Can you successfully make your way through the Patrician empire? Will your dealings all be about profit? These questions and more are all answered in Simon Stirling's tale.

It's been out in Germany for a while and it's very successful. In fact it's been number one on the PC since June and number six on the Amiga since September. The Patrician is a trade-management game set in medieval Germany in the period immediately preceding the Renaissance. At the time there was a powerful trading organization known as the Hanseatic League—a sort of early Common Market—and you take part in that league, with the aim of becoming Mayor of a town and eventually Patrician of the league. Heavy stuff.

You start the game in your home town with no workers, one ship and little money. From here you have to get married, use politically, grow rich and generally make something of your life, all played out within a complex game world. Everything runs a bearing on everything else, and nothing should be taken lightly. It might be OK to send money for the dog's interest now, but what happens when you get blackmailed for it later?

The game is indeed controlled and is a combination of action sequences and staged-up events screens. You are based at one of 18 towns and have to travel between them, trading objects and improving your profile. You don't have to make money in this way—you can always lend money, or trade in the black market.

Both highly risky enterprises.

A life on the water seems can be fraught with danger, though, and there are more than enough pirates around who will happily tear your decks. When under attack, you'll have to participate in action sequences, using the position weapons of the time. You don't necessarily have to fight pirates, though. If you have a spare ship you can rent it out to them, and they'll pay you handsomely and provide a little protection.

The Patrician's Dev. Patrician in Germany) has been coded by Hans-Dieter Ascon; they've spent almost two years growing together what they hope will be the Amiga game of the year. Ascon are headed by Holger Hübner, who used to be 50 per cent of German team Thalion. A PC CD-ROM version is currently available, so there's every possibility that a CDTV version will appear. The Patrician will be in the shops in June, so it's early a full review soon.



The Renaissance period gives the game a certain charm of scope but not, indeed, backdrop for the game.

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Get your game's review featured in the Screen Scene column of the Amiga magazine. It's the best way to get your game noticed by the Amiga community.



FIRST IMPRESSIONS

JAMES POND III

MILLENNIUM

Pond is back! The team that brought us the highly successful previous incarnations of Pond are at it again. As you're probably well aware, the James Pond games are basically an action-oriented jump, run, shoot and repeat platform series, featuring an unlikely and decidedly fishy secret agent.

After the delights of James Pond: The Secret of the Sardines and the even more recent, but less successful, James Pond: The Secret of the Sardines 2, the team decided to keep it simple.

Fortunately, Millennium have decided to put Pond back on track again with Operation Starfish. The mission sees our hero pitted against his arch enemy, Dr. Mangle. The evil doc has hijacked a space shuttle carrying a top-secret defense satellite and has landed it in the moon... A team of FBI agents



Will our fishy hero save the day? Only you can say.

are sent after him and, shortly before being captured, discover a hidden base on the dark side of the moon. It may be a small step for man but it's a bloody long way for an orange fish! Still, armed with a new submersible and a new set of gadgets, Pond leaves the safety of the sea to set foot on the moon. If any one can save him and restore him from Mangle's fishy plan, it's James Pond.

There are a number of new features set to appear in the game. The most impressive thing so far is our hero's speed. It's promised that Pond will move at least as fast as some of the



Although the graphics for action will be three-screen wide.



Produce new submersible design for our fishy hero James Pond and his dog.

hedgehog and, if he picks up the right gadget, faster than that! The blue hedgehog is really speedy! That's a very big claim, but if the preview we saw is anything to go by it could soon be reality. Another innovative feature is the introduction of a submersible (for Pond). Professor Frog, opening the door to a two-player mode. The game also boasts over 100 different locations, a bigger Pond (40x40 pixels), and even parallax scrolling.

The only down-side is that Pond III will be released in June only on the A1200, with a 500,000 version due later in the year. Could this be the first in a new trend of Amiga 1200 games? We'll bring you a full review soon.



Interface with other commanders and the strategy. A team of characters will be added by the new fully 3D-rendered action other characters.

RULES OF ENGAGEMENT 2

IMPRESSIONS

Command and Impressions are going to give you more to bring you Rules of Engagement 2 which promises a new look on an old theme.

You will play the role of Pond Commander of a group of spaceships through a series of campaigns against all the worst enemies and hordes. The game is being designed in a completely different way to most others, however, as the main part of your strategy actions will be conducted in a far more personal way, with the Commander of other fleets. A lot of time has been spent on the interface

intelligence for these, and currently each character has 10 different personality traits, giving a huge variety to the game population.

All other characters have full-color digitized photographs to accompany their character descriptions, as well as any look it should be just like dealing with deadly enemies!

To add to the human interface just that little bit more, the ship's computer will have an on-line news, including a lot of news reports, and a full review room.

Pond's strategy element will be starting how to allocate your previous resources. A full-screen view of the fleet, signed every time you will register immediate data.



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As Adventuresoft plan to take the adventure crown from Lucasfilm's *Monkey Island 2*, Tony Dillon can only marvel at the programming team without a programmer.

SIMON THE

Ever since *Maniac Mansion* burst onto the scene eight years ago, there has been a fierce battle to create the greatest graphic adventure ever. To be honest, Lucasfilm have held all the cards, sometimes against some very stiff opposition. Once they had *Monkey Island* in their hand, though, people got a glimpse of what could be achieved. The race was on.

The problems with most British adventure games is that they are too sad. The plots are always far too thin, and there are never enough puzzles to make the games last," complains Adventuresoft boss and long time schemer Mike Woodroffe. "Also, the games just aren't funny enough. Computer games should be funny, but most of the time they aren't. I notice now that people are beginning to include humour, which is good."

And Mike's new game certainly looks funny. The plot tells of a young lad called Simon who, since his 14th birthday has been attended with magic tricks. One day, a small puppy arrives on his doorstep with a rather fearful look. After reading intently, Simon accidentally opens a window to another world and ends



through it. The next? Well, you'll have to wait and see.

MINORITY MARKET

[illegible]

These measures will be coordinated with the rest of



REFERENCES

Throughout the game, you will receive a variety of hints about how you can make use of characters from the previous games. All over again, you have access to a helpful online library of the *Thomas & Friends* books if you need a reminder just along with the first part, and you have the longest page in the world. All in all, you will find the game fairly easy to play, and it is a good idea to play it with the help of a friend. The game is a good idea to play it with the help of a friend. The game is a good idea to play it with the help of a friend.

refers, as with the Locative ones, rather than the more symmetrical bidirectional *de* movement. 'We start to -hope it as easy to use as possible, but keep it intuitive at the same time. Some really just perform exactly the same function as verbs, so they *can* just use the verbs' (obviously such use isn't, as it turns out, a good idea). 'It's not a good idea, it's a game that doesn't need a manual. I never like to teach manuals, I just want to lead up and start playing.' (MS, Simon, see word games to be able to lead if and/or go to the interface immediately, and when they've done a little exploring and had some feedback, then they go back to the manual and find out what they've been told to do.)

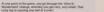




Walk to Look at Open Area
 Continue Pick up Olive Oil
 Talk to Sergeant Near Cove



Images: The expert graphics are being drawn on a PC with the graphics of the desktop and will then be loaded directly to the camera for the design. Moving a design from Adobe Illustrator's workspace can be done from either the application or from



ESORCERER

CULTURE AND COMMUNITY

distance control is the order of the day, but this is being designed as the most intelligent remote control to date. As you pass the mouse pointer over the verbs, possible words become seen-it. Clicking with the left button selects, and their sentences are constructed in the manner way. For example, if there is no one else in the room, the "Clive" verb won't light up. If there is someone, you can click on the "Clive" verb, and then on the object in your inventory. A text window will ask you "Clive object to whom?", and you'll then click on the person, you wish to give it to. Simple!

But does it matter how this field rolls out? Take Leonard O'Connor, for example. There's a



The 40 commands are all you need to find your way around the game. We cover no more than 10 minutes of playtime. —STEVEN LITWIN

JUST THINKING

Oliver Weinreich, who just happens to be Mike's son, has spent a long time working on the manuscript for his book, and most of it is very, very funny. And it's somewhat ironic in the game world because my input from past, present and future and what's possible taking my favorite team over the four winners (telling away in a post promising to be probably playing a game of What If... only they aren't) participating here in the novel, and what anyone is wondering why I haven't would have been great!

WEIGHT TROUBLE

Another criticism that kills levels at his death is the shortness, and simplicity of their games in comparison to Monkey Island 2. "When I finish, we're trying to create a game that, once you know everything about it and can run through it from start to finish, will take two hours to play. That's about as long as Monkey Island 2 is, when we've finished the game to our designs, we find it's all about, we've just add another location, and another scene."

Another puzzle could involve another day's play, if the current set-up is anything to go by. The puzzle involves two rows and columns of the plot, and go much further than the first puzzle and give it to the C++ variety as often used. In short, the puzzle is marked, straightened, interwoven and then divided into two rows and two columns.

in, possible, while still keeping their logical. In the case of the *Clay* scenarios, in most games that would be the end of that particular puzzle. In *Limbo* it would be much more along the lines of "Give the hint to the *Clay* because he has the gun you need to open the door to get into the building which contains the logic required to unlock the door..." and so on.

4. A lot of time is being given over to the graphics. The screenshots on these pages are PG-13 (with unfortunate), as there are no *Angels* screenshots available at the moment. But here's a screenshot for that much difference: once the palette is engaged, it's in 32-bit colors. If you study the pictures closely, you'll notice a difference not usually seen in this kind of game. In fact, they're far better than *Arkham*, *Legend* of

The second is simple. *Adaptation* is a series of five full-time artists working on the games. Three of whom (Maria, Jeff and Klarent) had never used a computer before. By using traditional artists rather than 3D/late portkeys, each location is sketched by hand using pen and paper, and then scanned in and processed on a PC. This gives much more clarity to the landscapes and a sense of a lot of memory loss, as you can control the palette. Lucienille hand-painted the landscapes and then she sent the entire image in, giving it slight burned effect to everything as well as using for too many colors, as Mike demonstrated when he coated the scenes, and then scanned the palette down to 25 colors. I think that's how it looks, and not particularly so late off time, but a huge main, as you can see.

THE CHAIRMAN

The program is probably the most impressive feature of the innovation on the MMS website.

1. The first step is to identify the problem or goal.

1. **Identify the**
 2. **problem.**
 3. **Identify the**
 4. **problem.**
 5. **Identify the**
 6. **problem.**
 7. **Identify the**
 8. **problem.**
 9. **Identify the**
 10. **problem.**

[illegible]

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ARABIAN NIGHTS



Krisalis think they have a good idea of what would happen if you crossed

Sinbad with Zool, Tony Dillon pictures Aladdin of the Nth Dimension.

This year it took like Krisalis are turning their backs on their footballing roots. Arabian Nights is a scrolling platform romp that promises to be the fastest, the biggest and the best ever. It may not be able to hold its own in those promises, but it does look like it could be one of the most varied platform games of a while.

Placed together by the two main team of Simon Peabody (Olivier Taylor, Manchester United '87, Magazine Robson) and Colin Robinson (over the last nine months, the game follows an entire the manual level-off. You have been captured and held prisoner by the evil Caliph (Sin, boy who takes you have kidnapped his daughter Apina (Sinwin). You haven't, of course, being the hero (Sinwin). So you have to prove your innocence. So, you have to first escape and second, find the Caliph's daughter.

WOMANHUNT

The journey will take you over 10 fabulous levels, but then again, what doesn't that only will you



This one here is just one of the main characters you will encounter in the game.



Below here, every other character can be seen in these three desert scenes.

have to run around inside and outside the city, you'll need to fly to a magic carpet, fly around in a diamond mine, ride in a mine cart, cross the sea on a ship, and about in the forest and if you have enough time at the end of it, that, you might just want to slip into a volcano or forest.

The promising thing about Arabian Nights is the amount of variation between levels. On the first level, you are racing about a straightforward right way scrolling platform game, with all the usual moving walkways, disappearing floors and razor wire rooms. On the next level, however, you are pacing the forest warring between two lions by using walls, just like that age-old classic Whodunnit.

PUEZZLING AWAY

The core of the game will be puzzle solving rather than shooting and flying. On each level, goals have to be achieved before you can move through obstacles to the next area. The goal might be to collect a number of coins or just find



Up to some other inspiration, a lightbulb appears over your head. Press space to get your idea.

A lightbulb appears over your head. Press space to get your idea.

the next, but you can be sure that it won't be easy - what else is it?

So you wander around, you'll find objects hidden in treasure chests or they will be given to you by people you talk to. It's down to you to figure out how they are used.

The clues come in the way of a small lightbulb that appears above your head. It is Gaster's hintlight. At these points, tapping the space bar brings up a text window that will usually list towards something you have to do. At the start of the game you come across a platform being hit from a wall. As you pass, the lightbulb appears and tells you that the wall is made from the mechanism that traps the prisoner is missing. What do you suppose you have to do then? Other clues, fortunately, are less obvious.

One other sequence worth noting is the Mine Cart race. The mine layout is a maze of winding tracks and broken rails, and you have to find your way to the end by following tiny little signs while staying ahead of the other, strangely unoccupied cart. If you beat the mine scenes in Indiana Jones and the Temple of Doom, you'll love this.

Although Arabian Nights might not look like the most original platform game ever devised, it sure does look like it's going to be fun. We'll have a full review very soon.

BEHIND THE SCENES

■ **Like Arabian Nights** ■ **Published by Krisalis** ■ **Created by Simon Peabody and Colin Robinson** ■ **Programmed by Simon Peabody** ■ **Released from April** ■ **Price £14**

EXPRESSIVE ART

The main character, whom we'll call Sin, sure is cute - or, in fact, has a variety of expressions and poses, and moves displaying them whenever he can. Learn how to use him, and he'll start pointing out to you. Read him how close to the edge of a platform and he'll warn his area is below him. The less he can, and he'll do it. And, I know it will look better before, but it will make me laugh.



Arab Nights



Arab Nights



Arab Nights



Arab Nights



Arab Nights



Arab Nights



Arab Nights



THE FUTURE OF CODING?

Computers in the near future might even start inventing or finding program games. Instead they can then use pattern editors game engines, leaving the world of game production open to developers other than coders. GSI have also written their own engine, which allows them to write code and test code. The engine is flexible enough to allow them to add new elements when needed. I asked Rick if he saw this as the way for work in game development, particularly with console hardware on the line of new programmers. 'Yes, absolutely. There will always be a need for new programmers, but with a system like this, only a very basic knowledge of programming is needed.'



The original WIP, equipped with the full version 1.0 software to make the game an Amiga 500 compatible game (GSI).



Every building has its own Cyberpunk network, allowing for game play via the Amiga.

Take a quick look at this guy's face - he's a hacker who can play a game like you!



CYBER

In a violent future city the only way to escape is to enter a virtual world inside your computer. Join Tony Dillon as he takes a stroll amongst the hardware

Imagine a game where you had the freedom to walk through a computer city, a game where you could meet people you recognise and share up friendships, a game that didn't restrict you to a single path or a single goal. Most importantly, imagine a game that didn't behave like one - a program so realistic that you forget you were playing a game. Sounds incredible, doesn't it? It also sounds a long way off, but not if you take a look at what GSI are currently toying with.

The team that made polygons with brains for the first time on the Amiga, creating games like *Deadly Sin* and *Team Yankee*, are getting ready to release what could be the most incredible Amiga game ever.

A NEW GENERATION

Most people are familiar with the term 'cyberspace' and its origins in the various William Gibson novels, if not from games like *Ultima* or *Neocortex*. But from the features GSI has seen on Gibson and his world predictions in the past, *Cyberpunk* will be the sixth generation of computing, vast computer networks that you actually enter - literally for some people. No more sitting at a screen waiting for a modern download. No more tapping your fingers in confusion as you wonder why the hardware is taking so long to load a file. The world of *Cyberpunk* is yours to do the running.

Cyberpunk, the game, is based partly on the Gibson novels, but mostly on the GSI role playing games of the same name. A complicated idea, similar in style to Games Workshop's *Cyberpunk*, the game is set in the murky streets of a dark-future past but in a green, crime-filled future. The message is simple: things don't get any better from this point on. But how did it all come about?



WIP

When Team Yankee, we did a couple of arcade conversions, just for a change,' says Rick, 'however, nobody here really enjoyed using them, and we couldn't wait to get our teeth back into something really. John Wood, who designed *Deadly Sin*, came up with most of the design for the game, and we've been working on it for the past 18 months.'

Then the cyberpunk RPG license came up and we went for it. Most of us here play RPGs, and one thing that really gets to me is the fact that there are no real role-playing games on the market. Obviously with games like *Ultima* or *Neocortex* the game is progressing, but most of the time you're just playing someone else's adventure. There's none of the free-generated by a human. *Game's Master*. What we're trying to do is give the computer GSI some intelligence, so you don't end up in one of those situations where you're walking around aimlessly, not quite sure what to do and then nothing happens. In *Cyberpunk*, the computer will tell you what you're doing, and most of the time it's a lie. The computer is there to help you, but it's not doing anything to do with the overall plot, but at least you're doing something!

SIZING UP

Surely if an adventure is written well, there's no way that a character could perish in the past, unless it



Deadly Sin was more than modelling with Cyberpunk - the Amiga version of the game - by John Wood. It's a game that's been in the works for a long time.



After the belly-bumping antics of Chuck Rock, the prehistoric boozer returns for some more platform fun. Only this time he's had a son. Tony Dillon goes clubbing.

I have to take my hand off the joint and admit to one and all that I was never really a fanboy of Chuck Rock. Most people I speak to seem to say the same thing, but then didn't stop it ousting everything in sight when it was last released. Now, after two years, Cam have returned with Chuck, Ophele and a new addition, Chuck Junior.

After defeating Gary Snider at the end of his first adventure, Chuck has called back to a life of luxury and success. With his developed mechanical skills, he got right past the wheel and the and any other major inventions and created the "Rock-ET", the world's first car. "Chuck runs an instant hit, and quickly became one of the hottest men in the world as owner of Fjord Motors. But that success was instantly topped to the side of Chuck Junior.

NEVER LAST

But things aren't all roses are they ever? No, Chuck made a lot of poor-run mistakes on his motorist rise. One sunny afternoon, his hounds enter Fjord Motors with a proposal

that you can choose the difficulty level the game plays on, which affects the strength of your attack, the strength of the enemy and the complexity of the puzzles. On the easiest level, the traps and problems are marked with arrows, making puzzle solving far simpler.

Wield your difficulty level, and it's straight off to the prehistoric suburbs for some serious clubbing. Naturally the first thing that hits you are the graphics, and initially to be honest, they look a little messy. Obviously, there are multiple levels of graphics, and it goes without saying that there are dozens of colours on screen at



One of the dozens of levels in the game, the landscape still makes sense even when you aren't exploring it.

CHUCK ROCK 2 SON OF CHUCK



The prehistoric flora, and for a talking to it's a painting, so you can see from the side while the main one.

from Brick Jagger, of rival company Sunstone, to buy Chuck out. Naturally he refused, wishing to keep his son's future safe. On his refusal, he's built out of the office at gunpoint and kidnapped. Ophele is too worried to do anything about this, so the only person who can rescue Chuck is... Junior.

The game itself is a scrolling platform escape like the original, in which Junior must nuzzle from left to right, leaping, dodging, leaping over spikes and generally causing the same kind of havoc that "St. Month old babies usually do. It's all set over six huge levels, with four sub-games played out in between, so there should be enough there to keep you playing for a while.

From coding you are treated to an excellent animated intro, which leads only the main menu screen,

once. That doesn't really help the fact that should off all you can see is a large green expense, but I don't think I'm going to get used to it, so that's alright.

ADORABLE

Once you're adjusted to having a layer of parallel scrolling in front of the main character, you can begin to appreciate the superb character animation. Just the main game alone is bursting with personality. Check the score as the character in the bushes. See him screen a battle cry as he leaps heroically into the trap. Watch his go-woooo as he runs out of energy. Before throwing himself on the floor in a screaming rant (just like our mental father). Here's just another example (Strike the B's).

As I've said, you start the game in the suburbs, which you little more

1000

CHUCK ROCK

SON OF CHUCK



Now the successful owner of Chuck Motors, Chuck Rock has been kidnapped by his arch rival in business, Brick Jagger, the shady boss of the Dastardly Car Company. Following the arrival of the ransom debt, Ophelia cries as she reads the list of demands to secure Chuck's release. Six month old Chuck Jr. breaks out of his playpen vowing "I'll be back - with my dad!"

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Screen shots from Amiga Version

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The more experienced players looking for a challenge, Electronic Arts has something for them too. You can turn the game into a tactical training exercise, where you can set up various scenarios and see how you can take out the 'bad' guys, giving you more of a challenge.



Dan's always wanted to get his hands on a big chopper, so when we gave him a copy of Electronic Arts' latest shoot 'em up, he got all hot and bothered. One cold shower later and here's his review...



DESERT STRIKE



One noticeable improvement over the original version is the enhanced graphics. Everything simply looks much prettier.

remaining targets.

The engine action is viewed from an isometric, three-quarters top-down perspective and the screen scrolls in eight directions, panning out in front of the 'copter as it's guided across the desert terrain. It's possible to configure the controls so that either the joystick, mouse or 'key-board' can be used, although I found the mouse controls virtually unplayable. The joystick is also a problem because the keyBoard is needed to access the map screen and toggle between the three other-

and weapons. This can be a bit of a distraction, especially when you're in the thick of things. Target's pop-up was much more effective, as everything could be accessed via the three buttons.

SOUND AND VISION

Graphically, the game looks a treat. Everything has been rendered in the Amiga 64 colour extra half-bits mode and the battered atmosphere is enhanced further with huge gals of smoke drifting across the desert and burnt-out wrecks littering the area

Much of the game's military hardware has been retained and the windy explosions of the original have also been retained in favour of digitised effects that resemble real firecrackers. Even the sound is top-notch, with clamped gunfire, motor-chasing engines, and the death-screams of enemy troops heightening the on-screen action. The when of the 'copter's rotor blades speed up or slow down in sync with the craft's speed and an on-board computer voice warns when supplies are getting low or if you're entering a dangerous danger zone. Best of all is the screaming launch of a Hellfire missile and the rattle of the chain gun as you wreck your vengeance on the enemy forces - they're some of the best samples I've heard in an Amiga game for quite a while.

But great graphics and winning samples don't necessarily guarantee a good game, so any footman who will surely tell you *Descent*, *Descent II* is simply amazing to play. Once you've started a campaign, you just won't want to stop. There's so much to do and each mission is refreshingly different from the last. Once you've mastered the 'copter's controls, this is the real test of the parts stuff-ham. Any of the campaign scenarios tie in to the original version, although some



Look up the flying bits and your 'copter comes in the ground in a flash!

missions have been made a little harder to easier in a result of feedback from EA's playtesters. One important change, though, is the near-invincibility of your MiGs. Previously they had become a sort of a contentious issue since the Americans managed to win off more of their own troops than the MiGs were capable of, so EA have decided to make your jet team with a more Kyubloke invulnerability. This means that no matter how many Hellfires you shoot into their midst, they'll still be left standing once the smoke has cleared. Fortunately, some of the other characters in the game, such as a jet, is not so invulnerable and can be reduced to smoky content with a well-placed missile. That's definitely more like it! In *Descent II*, the sheer quality of the opposition forces. If you position your gunship so that a target

MISSIONS IMPOSSIBLE

As the US's top fly boy, you've been chosen to pilot a lone Apache 'copter in a series of covert operations against General Kilbaba's regime. Be careful out there!

CAMPAIGN ONE AIR SUPERIORITY

It's important to establish air superiority right away. Knock out the two radar sites first, otherwise the enemy's defenses will be able to automatically track your chopper as it flies across the desert. Each site is guarded by a couple of AAA batteries. These can be played off with your chain gun while you remain outside their range. Your first target is the power station. It's relatively undefended, but is heavily armed. Don't be tempted to use your valuable Hellfires though - keep plugging away with the chain gun until it eventually explodes in a huge fireball. Once that's taken care



of, it's time to take on the heavily defended barracks. There are two to take out and they're surrounded by Rapid SAM sites, AAA batteries, and a whole host of other such goodies. Extreme caution is advised. Even when you've polished off most of the perimeter defenses there are still the mobile rocket launchers to take care of as well as some suicidal bad soldiers who just won't quit until you've reduced them to a pile of rubble. Keep an eye on your fuel supplies as this part of the campaign is extremely time consuming and you'll probably have to refuel a couple of times during your raid. The command centres are also heavily defended with missiles and missile banks forming an outer ring around the complex. Once you've regained your way past that lot, the real

heavy stuff is ahead into play and the air becomes thick with both A's and host-missing missiles. This isn't a time for heroics, so hover just outside the perimeter and pick off your targets one by one. This might take some time, but it's better than charging in and getting your rocks shot to pieces. When the command centre falls, give up the flying. A commander who will give you details of where the American spy is being held hostage. After cooing and flying your complaint, head back to the MiGs for some well-deserved victory celebrations.

CAMPAIGN TWO SQUID BUSTER

Now that you've established an authority it's time to turn your attention to the enemy's road launchers. As in the first mission, it's easy to take out the radar sites first. They're even better protected than the first lot, but if you keep a cool head you should be able to accomplish it without taking too many hits. Now it's time to deal a real blow and test your improved computer. The area around the jet must be



made safe before you blast open the building, otherwise the flying 'copters will be picked off with ease before they can be picked up. After winning the prisoners to safety, another power station has to be destroyed, as well as a heavily fortified chemical weapons complex. This one will take all your Hellfires to complete. Once you've reduced the chemical weapons facility to a pile of rubble, the flying commanders need to be captured. After a brief interrogation, they'll give you the location of all the Road missile launchers. It's now a question of flying from one site to the next, blowing each one into oblivion. It's a race against time. Though, as they must be destroyed before they can launch their own missiles. At least five of the six launchers must be taken out before the mission can be deemed a success.

CAMPAIGN THREE SMASH CITY

Things really start to heat up now! This huge campaign involves eight

comes between you, and an energy gap empowers them, the whole will launch a volley of shots in your direction and do your job for you. It's also possible to break up your target and stay just out of range of its gaze while you pick it off — sometimes they're not even aware of your presence until you're a little closer when you're blasting away with all guns blazing. The only other complaint is the excessive number of shots it takes to dispose of some of the bigger installations. It's obvious looking to stretch out the action, so it isn't really necessary as there's not a lot of ammo.

How does this planning really work, and how
effective is it? *Journal of Management Studies*

I've swampland on the Amazon. It's not the Amazon, but it's a swamp. It's the swamp behind the sacred cow convention of John Mendenhall last year and everything about it really stinks. It's the little details that really matter. I stand out, such as the large number of the figures and the card positions. I mean up as a stream of Gullies up was the desert. Poor when you've completed a campaign, there's still lots in it if you don't want to head back to base straight away. And there's always the incentive to keep playing to improve your high-rolls.

The trials of the low-level strategy and spoof are up action in a contest but successful countermeasures. It might seem a shame to have to counteract, especially the Apache's supplies in the first test of Apache, but the game would be much easier if the strategy elements had been left out. In fact, the first-level game has a specific first and longer effect which will give you unlimited access to you can play it as an air-and-landed should be up. All things considered, *Warrior Strike* couldn't be a better game. The one is just right, the action fast and hectic and the mission suitably varied to keep you coming back again and again. It's got the just one more go appeal that the most of today's games seem to lack. Thoroughly recommended.



possible weapons and equipment is carefully planned if you're not to fail and fail badly through. The first mission involves securing a depot of United Nations inspectors who are under attack in a hotel's gun room. There's an enemy tank to take care of, a couple of ground forces, and a couple of weapons. The second mission is a surprise, as you're not told the inspectors or you'll have to start the mission again. The next target is a biological weapons complex on the city's outskirts. The third mission involves a lot of on-edge action, as you're being chased by a tank, and you have to be downed and then get up again. Finally, you'll give up the location of the underground missile site which should be your next objective. There are commando-style tank drives and are difficult to locate at first. Prepare the ground with white foam and then go on to find them. Less

[illegible]

whose of Kibuka's army appears to have converged on the area. Most clearly are the enemy helicopter's rotors seen in the form of gray. There are also the various gun emplacements, ground troops, tanks and other military hardware to observe. It is not possible to shoot through the stage of the game without returning, so make sure you're located on a strategic stage before the inquiry. Your top point is needed to drive a bus to ferry the hostages to a safe haven - it is incredibly valuable. Be the enemy too, so needs to be accounted of the area to the Kibuka's

is a spot of environmental concern. The fourth stage, organic, prohibits the use of synthetic fertilizers and pesticides. Kibuka's farm is in this category, being out of all the growing but not the harvesting stage. The farmer has been burning out all the growing but not the harvesting stage. The farmer has been burning out all the growing but not the harvesting stage. The farmer has been burning out all the growing but not the harvesting stage.



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Sports Masters is a compilation of some of the best sports games ever, including the classic **PGA Tour Golf**, possibly the best computer golf simulation on any machine, **Advantage Tennis** with its realistic, smooth animation and 3D court movement and the amazing - literally - **Indianapolis 500**, where the race can turn to stock-car-style in seconds. If you fancy a pop on the greens, or screaming round bends at high speed, then this is the package for you.

Fortunately enough, this is also the competition for you. To celebrate this release, CU have teamed up with **Empire Software** to bring you what has to be one of the greatest competitions ever run in this magazine, with one amazing prize for every game in the best! Here's what you could win:

PGA TOUR GOLF

You might think you're a real whiz on the digital greens and fairways, but how about the chance to really fly your turf? For this prize you could be sampling your way up and down The Betty with your own personal coach. Yes, the prize comprises a complete Golf lesson at the famous Betty course, which will be videotaped for you to take from your master later! You too can enjoy the fairways and bunkers of this Par 72 course, home to the famous Johnny Miller Ryder Cup, and maybe even find a little *Ben-Hur* in your swing! The course has always been regarded as one of England's finest, and since some alteration last summer, it now gets even higher praise. 'The changes are fantastic', said Hydr Golf team member Colin Manganam. 'This time, you might get the chance to agree with him!



INDIANAPOLIS 500

If a fasted, banked track doesn't offer enough excitement, this is your chance to witness the winner of the Indy 500. The winner of this prize will soon find themselves hurtling around the Brandy Hatch and Old Road Courses, the ultimate off-road experience! One minute you'll be climbing a steep bank of mud, the next you'll be navigating around tree roots. It's great fun, and very very muddy. It's said that this is the closest a national car gets to a Formula 1 course. Do you think you're tough enough for it? The emphasis is on fun, and safety, but that isn't to say it won't be exciting. After all, what would you think of driving a Suzuki Samurai four wheel drive over terrain that's impossible to cover by foot? Obviously, to be eligible to win this prize, you must have a full UK driving licence.



ADVANTAGE TENNIS

Get ready to get tennis advice and then have it given to you! The winner of this fantastic prize to the Riverside Racquet Centre, probably the finest tennis and leisure centre in the country. It's so good, in fact, that among its members are top professional tennis players, such as Stefan Edberg, Pat Cash and Jeremy Bates. After receiving a full hour's tennis tuition from one of the many professionals at the centre, the winner and a friend have the rest of the day to enjoy all of the centre's excellent facilities, including grass and cushioned concrete courts, a variety of exercise studios, a six-lane, 25 metre swimming pool and, should you feel yourself a little tired at the end of all that, a clubhouse to relax in afterwards. What a day-out for the lucky winner!



T DAY OF R LIFE!



EUROPEAN CHAMPIONSHIP 1992

If placing football games puts you in the mood for some real action, then you won't find anywhere better than Wembley Stadium, home to more big games than Toys 'R Us. Get your name dotted out of the bag for this prize, and you—along with your family—is party of two adults and two children—will receive a ticket for the New Wembley Stadium Tour. This enables you to sit four behind the scenes. You'll get to see how the Wembley Control centre operates with the thousands of fans, learn about the history of the stadium and even climb the famous steps to the Royal Box and visit the changing rooms.

In addition, if you come close but miss out on the major prize, there's a chance to get your hands on one-of-a-kind Flamingo up-prints—copies of the brilliant Spain Masters compilation.

So, what do you need to do to get your already heavily riled-up set of three magnificent prizes? Just answer the questions. On this page are four sets of questions—one for each prize. You can enter for all four prizes if you want, but you can only win one. If you don't want to win a particular prize—for

example you don't hold a driving licence, so don't want the Brands Hatch prize, then leave that set alone.

Once you have completed the competition, stick your personal details in the spaces provided, fold out the slip, stick it in an envelope and post it to us with no delay at 1 World To Win The Best Day Of My Life, CU Amiga, Priority Court, 30-32 Harrington Lane, London EC2H 8JG. Employees of EMAP Images, Empire Software or any of the clubs and promoters used for prizes are not eligible to enter. The Editor's decision is as final as we get it. Some Wembley Stadium images may be reproduced in the future solely for literary or death arising from accidents which occur whilst attending any of the prize venues.



ENTRY FORM

• PGA TOUR GOLF

Question (1) When was the first recorded PGA tournament?

Answer: _____

Question (2) When were the first golfers allowed to charity?

Answer: _____

Question (3) Who was the first American to win the tour?

Answer: _____

The breaker: The record of a golf swing is _____

Answer: _____

• INDIANAPOLIS 500

Question (1) What is the nickname of the Indianapolis Speedway?

Answer: _____

Question (2) In which decade was the Indianapolis 500 part of the Grand Prix World Championship?

Answer: _____

Question (3) What does the '500' mean?

Answer: _____

The breaker: I have 10 winning engine breakers _____

Answer: _____

• ADVANTAGE TENNIS

Question (1) Who was the first British women's coach of Wimbledon?

Answer: _____

Question (2) Who was the oldest male player to beat a pro's first?

Answer: _____

Question (3) How much should a tennis ball weigh?

Answer: _____

The breaker: The size of a tennis ball is _____

Answer: _____

• EUROPEAN CHAMPIONSHIP 1992

Question (1) How many 1/4 Cup matches have been held at Wembley?

Answer: _____

Question (2) What is the seating capacity of Wembley Stadium?

Answer: _____

Question (3) Name the major musical charity event of the 80s, held at Wembley?

Answer: _____

The breaker: How long it should be in the England record books _____

Answer: _____

Answer: _____

Answer: _____

Answer: _____

Answer: _____

Answer: _____

Answer: _____

Answer: _____

Answer: _____

Answer: _____

Answer: _____

Answer: _____

• PGA Tour Golf

• Indianapolis 500 (Answers for all breaking records)

• Advantage Tennis

• European Championship 1992

STARRING HORROR



Professor has bleeding in
back. The containment ritual
has failed. You, alone, are left to
face six of the most fearsome monsters that
ever roamed, chosen of their hideous misdeeds
and a twisted master. You must obtain a
specific object from each creature and locate
the six missing pieces of the Bloodline Jewel.

If you ever get as far as
decoding the hidden War
Chamber then you will confront the
monsters in a final battle. There are
underwater caverns, secret rooms, room-shifting
passageways, mazes, gifts of vicious spells and
much more you may not want to open.

Your chances are slim!



LEAP

ocean

YOU WILL NEVER PLAY
THE SAME BOARD GAME
ANY MORE. AGAIN. GET
A-CRAZY. AGAIN.



ABANDONED PLACES 2

Tony Gill likes creeping around in the dark, mixing with all manner of

Tony Gill likes creeping around in the dark, mixing with all manner of social misfits – which makes him the ideal person to take a look at Ice's latest RPG stormer.

A Declined? Please—could have been a great success, but the collapse of its distributor, Electronic Zoo, means that many games players never got their hands on it. Fortunately for RPGs fans everywhere, the sequel has just been released by AOL and looks set to be the smash-hit hiting brother never managed to be.

Originally, certainly, isn't this game a strong point. If you're familiar with the look of *Eyes of the Beholder* or *Black Crown* then you'll feel quite at home in its dark passages. The mechanics in almost identical to the

ons of the 16. Four hundred years after the events that formed the original game, you are once again called upon to save the kingdom of Argentina from impending doom, by killing Perduguemal, the creator of the evil Brontax.

All of the main ingredients of an RPG have been incorporated into this game. From a list of 100 talents you select a team of four aspiring champions to battle your way through 35 levels of monsters and puzzles. Fighters, Wizards and Clerics stand ready to take up the armor and conspiracy stream throughout the game.

SOUND BYTES

There are some atmospheric patches of music, plus some interesting sound effects. However, there are only a few instances where it could have done without some of them. One sound which you'll have to learn to live is that mad clip clip-clip of your hand. The composer



Twitter the social-sharing share is [@jaguarlandrover](#) you can't guarantee your membership please see [this](#). But we need to make a record that we're here.

tap-dance reaches a crescendo whenever there are moments, usually — some kind of Maude Clam-rater, I suppose — after a while I realize it isn't too intrusive and I find myself reaching for the volume knob.

OUT OF CONTROL

the game has many alternative movement controls, but some of them appear to be a little on-the-stupid side. Let's face it, when you have a demon breathing down behind you, you want to be absolutely sure that you're going to move when you press that key! Another problem with the controls is that they can be a little confusing—for example, you have to press the right mouse button to open a hand weapon, but you need the left button for a magic spell. In the heat of battle that little touch can cost you a whole lot!

OVERSIGHT

...to the fact that the...
...to the fact that the...
...to the fact that the...



*The company's management has not stated a final position about the decision to launch jumps out of a plane.

Two good reasons to put the flags out.



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with 100 lines • 100 lines



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For information, ring 0800 471111



Most of the time you'll be concentrating on the target ahead when the info provided at the bottom is unnecessary.

A number of recent Amiga flight sims have taken their inspiration from real combat situations. *Flight Of The Intruder* was set during the Vietnam War, *Heath Air The Silver* had us participating in the Falks-O Britain and Ireland, and there are some exceptions, but I think you know where I'm coming from [I know where you're going - *CU*].

Of course as its surprise, then, to learn that *Combat Air Patrol* is based on the Gulf war when we really ought to be asking Hussein not to mess with us Westlanders. Except we didn't because, although we're comforted in knowing Hussein, the tyrant is still in power and taking his people with a ruthless hand. Well, now's your chance to rewrite the history books and drive Mr Hussein out of power with a hefty combination of military planning and flying skills - all in the privacy of your own home!

ACT RESPONSIBLY

To succeed you'll need lots of strategic thinking. How do you ultimately responsible for the whole of the US force, focusing units is delivered into a handy campaign map and once you've manipulated the maps to your satisfaction it's off to the mission screen where inside the targets and objectives of the next planned flight.

From here you can either accept the assignment and start thinking about what equipment you'll be requiring, your self with a target time by playing over to the busy medical officer who will sign you off sick for the day. Two much rewards, however, will result in a swift discharge as the rest of the

COMBAT AIR PATROL

Tyrants, dictators, male chauvinist pigs - is no-one safe from John Mather and his magnificent flying machine?



You could hardly describe the campaign map as impressive, but that again you could hardly describe the game as not being in a pig, or who care?

well, don't take kindly to maligners. Once past the tedium of selecting your weapons (just press 'default', is the advice, you'll find yourself aboard the USFV Thunderbolt Aircraft Carrier, ready and waiting to take to the skies and do some serious damage to the Iraqi army. It's as you take off that the quality of *Combat Air Patrol* becomes apparent - the *look* to

appear noticeably. And whereas looking sideways at behind would usually involve the screen blanking and 'putting in a separate view, you can still see the cockpit around by pressing the keypad, meaning it's possible to swing around to one side and back again with some realism. You can also do an *Expendable* style 360 degree head turn, which is always something to impress your friends with. Probably

take your flight simulator seriously, as the action is far more immediate but, for the most part, the screen serves to make it far more accessible.

To be a long time since we last anything near a decent flight sim for the Amiga. *Playground* really 'flew out the right' back into simulation. *CAT* will have you twisting or - indeed - twisting by the tailed end. **A**

FLY-BOT

The plane itself is a joyride. There's hardly any 'massing around' the right are simply chosen and with the choice of either mouse, joystick or keys, every prospective pilot will find a method which suits them. The controls aren't as complex as in most simulations and the necessary keypresses soon become second nature.

The actual landscape is fairly simple but the game does that makes up for this in the playability stakes. The 3D routines are also suitably speedy and everything, from the other aircraft to the ship, whizzes by at an amazing pace. The general chaos we experience is further enhanced by the complex sound effects which add of any damage and give other valuable information.

Overall, it's hard to find fault with *Combat Air Patrol*. It's fast, thrilling, and - most importantly - fun to play. It may come to quite a shock to gamers who



This cover artwork depicts what you will see when you take off in a T-476 and discover that *Combat Air Patrol* is really a very simple to use.

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GENRE:	FLIGHT SIMULATION
TEAM:	IN HOUSE
CONTROL:	MOUSE
NUMBER OF GAMES:	1
NUMBER OF PLAYERS:	1
HARD DISK INSTALLABLE:	YES
MEMORY:	1MB

GRAPHICS	*****
SOUND	*****
PLAYABILITY	*****
VALUE FOR MONEY	*****

"If you're into flight sims, then, if you're not, buy it anyway."

OVERALL 88%

MEAN MACHINES IS REALLY GREAT

And that's our totally unbiased opinion



Well, alright, maybe we are a teeny bit influenced, but let's face it, what other mag gives you such hot news, such stunning previews and as many fantastic in-depth reviews of the latest games as MEAN MACHINE SEGA does?



MEAN MACHINES really is that good and it's in all good newsagents now priced £2.50

SMALL TIPS

Can't zap that alien quick enough? Fed up banging your head against the wall in frustration? Here's CU's very own headbanger, Tony Dillon, with tips so hot, you could dry roast your grandmother on them.



ALIEN BREED - THE SPECIAL EDITION

To skip through the levels of this superb alien shooter from Team 17, type the following key sequence.

GAZWBSEDRPFTTGBYHNSJIKOL
GAZWBSEDRPFTTGBY

You might find it easier to press the keys in groups at times, e.g. GALT, WSLR, etc.

ASSASSIN

No-one could say that Team 17's platform caper is easy, no-one's a whole platform of helping hands. On the first level, go to the first bar you find and climb to the top, left corner etc. Over there, type in:

PINKALL FANTASIES

Here are a few more codes for Digital Dream's excellent pinball simulation. Thanks to Colin Thompson at SmartArt, Glasgow. Type in the following codes before entering the number of players.

IRON-ENDER Makes the balls heavier
YACUJUBI CLAMARK Causes the high-score table to flash
BAITING AND Disables the Tilt Function
FAIR PLAY Resets all the cheat options



RECEIVEFROMAFREEMATE (no spaces) and the screen's border will flash a couple of times. Press F1 to skip the game, now the following keys can be used to make the game that little bit easier:

- 1-6: Go to the selected level (with unlimited energy)
- W: Shows you the optimum weapon configuration
- E: Takes you straight to the end of level Guardian
- C: Guards infinite continues

TROLLS

Love stepping on Flair's imaginative platform like a rotten's foot? Start the game and walk to the 'Trolls Pop level door. Push down to enter the level, where the level has loaded and you can choose the 'Kor friendly' screen, push up on the joystick and hold the K key while pressing the fire button to start the level. From this point on, if you need to die to complete the level you're on is in the Skipper key.



JOE AND MAC CAFEHAN NINJA

Ever a muck-up comedian isn't the essence of Ninja games, but then again it isn't when it's in the prosody. Here's some help to keep you on the right track.

The cowman carrying the rock will nearly always drop fruit. Hit him, and then jump on the rock he drops three times to get the fruit. Now and again you'll come across a character who isn't doing anything. When he wakes up and starts moving, hit him for extra points. Virtually alluding to a special Spaceman bonus. Stay on the right side of the screen to get this.

On levels 8 and 10, after you have defeated the spiky guy and the disk lands for the next level starts, hold the joystick left and hold the fire button until the bonus section starts. You'll float down slowly, and will be able to catch more bonus fruits.

THRAWAY THOMAS

For instant wins on GALT's winning little platform game, type in 'Twin Flies Like A Batard' (no spaces) at any point in the game. From that point on, you can take as long as you like!

NICK FALDO'S CHAMPIONSHIP GOLF

Are you tired of your golf score increasing with your (almost) unlimited money? Don't worry, because here is the ultimate guide to the first course in this difficult golf game, courtesy of Goodhouse themselves. And if that isn't enough here is a cheat to help you get a hole in one every time.

First, you need to be playing in another mode and should play. Play the hole as normal until you reach the green and see the ball. Then select 'Go position for midrange'. On the last green and once more choose the midrange. You'll find your midrange green down by one. You can repeat this as often as you like and you get the hole in one.

- Shot 1: This is a long par 4 requiring an accurate tee shot to set you up for a mid-range 2nd.
- Shot 2: This short par 4 requires a tee shot on the left green. Hit exactly on the left edge of the green.
- Shot 3: This should reach the green of this Par 5 is a long, accurate drive. This will set you up for a mid-range 2nd.
- Shot 4: Forget the midrange and concentrate on a straight hit. The two bunkers here have increased to catch any drive off line on this Par 4.
- Shot 5: This requires 2 only needs a long straight tee shot on the right green.
- Shot 6: This short Par 4 offers an early birdie possibility, but only if you hit a long shot.
- Shot 7: The middle water hazard makes you hit the shot the way shot. Think about the position from here to green.
- Shot 8: Consider a long tee shot off the tee to ensure good recovery from the bunker on this shot. Par 4.
- Shot 9: With water down the left side of the fairway, a short is long trouble. Stronger hitting should make an approach on this simple Par 4.
- Shot 10: No danger here, but be careful with the club selection.
- Shot 11: A short par 4 that requires a straight tee shot and some recovery with a strong wedge.
- Shot 12: A long drive and a good recovery shot will leave you a ball away from a flag!
- Shot 13: Short approach is very important here, as the rough will hit the tee shot unless you're an expert.
- Shot 14: A significant Par 5. Use the right club and control back when you're in a position around all day. The shot will be a long shot on the course. Don't select it if you want to make the second without penalty points.
- Shot 15: Par 5 long par 5, but with the green surrounded by water. No danger until you reach the green. Remember, a main aim can be to hit the ball to the green.
- Shot 16: This approach par 5 is the easiest. Watch for a green shot, long approach shot and two putts.
- Shot 17: Another long shot, this shot is a Par 4. The course layout makes positioning the important factor, and watch out for the two bunkers behind the green.



PART 3

The final instalment of our Street Fighter 2 guide. Our top tipster Steve Keen is here to help you out of that tight corner. Let's ROLL!

STREET FIGHTER 2

KEN



VS. GUILLE

Guile lunges towards you at the time to use your Dragon Punch often. As he spends a lot of the time in the air the same tactics apply as with Chun Li.

VS. RYU

Get in close and use fast attacks to whittle him down. The only special move of any use is the Dragon Punch, so smash away with that!

VS. DHALSIM

Free your jumps so that you can get in close without getting hit and then attack. Alternatively, just stand back and throw Fireballs at him. Most aerial assaults directed at him will be countered with a kick.

VS. BLANKA

Although Blanka has a longer reach he will mysteriously jump in on you. Dragon Punch him.

GUILLE



VS. KEN/RYU

Make good use of your Sonic Booms to counter Fireballs and to knock in the occasional hit. In close combat, use leg sweeps to hit the guys fast in rapid succession and get in close then and leave them at your mercy.

VS. BLANKA

Blanka relies on their power to win and for that he has to come at you at the time. Use the Sonic Boom to reach him off and quick punches when standing too far back. As a distance you can throw a Sonic Boom or two, but not too many!

VS. DHALSIM

For once having a character who likes to keep his distance. Use this to your advantage and let loose Sonic Booms. Quick attacks will knock him off guard and smash him into the ground.

Backwards into submission. If you let him shake the fight you'll definitely come worse off.

VS. HONDA

Honda will try and over power you from close range with furious hand slapping attacks. Keep him back with Fireballs and leg sweeps. If your timing is off Hurricane Kicks work very well in keeping him away.



VS. ZANGIEF

Make full use of your Fireballs until Zangief gets in too close. Then switch to rapid punches and kicks. But much energy will be taken off at first, but every time he gets in to hit you.

VS. CHUN LI

Because of her great speed you have to time your Dragon Punches to perfection as she flies over your head. Use leg sweeps to hit her as she lands near you.

VS. HONDA

Keep the fast man back with those protective Sonic Booms, you'll score heavily at the beginning as he's pushed to the edge. High-powered kicks can be used for close attacks and, if the mighty warrior uses the Sonic Tornado, time a punch to catch him at the start.



VS. CHUN LI

Immediately smash down when the fight begins and wait until she jumps over you, then leg sweep her. Alternatively, perform the Sonic Kick when she's still in mid-air to bring her wrath crashing down.

VS. ZANGIEF

Use all your rapid moves on Zangief before he can get in close, once there he'll overpower you. The Russian has a problem blocking fast moves so keep your attacks below the waist.

KEN VS. THE BOSSES

VS. BALROG

When the guy is a good distance use standard Fireballs. Balrog's very vulnerable to Hurricane Kicks as without shields, especially when he turns his back on you for a power punch.

VS. VEGA

Never let Vega get in too close. It's incredibly fast so whenever the Spanish boss with Fireballs and Hurricane Kicks, if he enters the frame for the first time, prepare a Dragon Punch out, if you let him on the way down, he'll be damaged against him!

VS. SAGAT

Don't let him so much as you can, but don't keep in or let it happen too often, use a Hurricane Kick to get near to him and then step back and wait until he's almost out of his way.

VS. BISON

The last attack when he eventually jumps at you and if you're lucky one of them will land before he hits you. If you miss the Flaming Ball above jump over it, then it's no thinking as you'll win by.



GUILLE VS. THE BOSSES

VS. BALROG

Even though he is slow Balrog can really punch. Try and keep at a distance and fight with Sonic attacks. When he comes in the game, punch and a leg kick and then hit him with everything you've got.

VS. VEGA

Destroy one who should be kept at a distance. When he enters the frame, either throw a Sonic Kick to push him on the way down or jump to the back of his screen out of his way. Quick punches are the only tactic that will win this.

VS. SAGAT

Sagat is actually pretty easy to fight. Keep in close with a good punch, and watch Sagat if you can't see him as with a leg sweep to clear him. Simply repeat until he's out for the count.

VS. BISON

Beating Bison is almost the same for every character. You need a lot of speed and endurance. When he jumps over you, use a leg sweep to clear him. Simply repeat until he's out for the count.



ET FIGHTER 2

BLANKA VS. THE BOSSES

VS. BALROG

Attack with a wall then follow up with an upper cut and a ring spring. Keep attacking forward until he's pinned in the corner and finish off with some treatment!

VS. VEGA

Just stand still and let Vega jump at you then by his own hands on top of you with electricity.

VS. SAGAT

Jump straight up into the air and hit with an electrified springing claw attack. Immediately follow up with an upper cut. If he jumps towards you by foot!

VS. BISON

Repeat the wall hit at the corner. Once established on the top corner and hit with some punches. Then take him with the spring to his hands. Finish off the Flaming Spear upper cut to his face.

DHALSIM VS. THE BOSSES

VS. BALROG

This bossing should prove to be no problem! Keep a good distance and make sure you keep between those long legs and feet always. You can even use Tapa Fire occasionally for a bit of variety if he gets too close just chop the lightning in the end.

VS. VEGA

Vega will usually go after a get in close pretty early on the video screen, you should follow with an electricity attack and two drops, always quickly between the legs in three hits at. If you manage to stop Vega before he hits a three and immediately punches or foot hits.

VS. SAGAT

You must have your work cut out here. Attack with Tapa Fire all the beginning and, whilst it's travelling through the air, use two punches to keep Sagat occupied. Repeat the process.

VS. BISON

The only chance you have of winning this fight is if you can keep Bison at a safe distance, which is considerably hard to do! After some drops, either attack with a ring kick or foot a Tapa Fire now. Follow it up immediately with a long low punch. If Bison uses his Flaming Spear attack, immediately use two drops around and kick. In these stages needed, the only thing you can do is to think with his power away.



BLANKA

VS. KEN/RYU

Use a rolling attack to get in close and then attempt combinations of punches and kicks to thrash the twins. If you can pin them in the corner pump up the Electric Shock for an instant victory.

VS. CHUN LI

Power up this electricity in readiness for 'maxed' shock-bait! As you're discovered by now she can't stop jumping over you so turn her knees away from!



VS. HONDA

Don't let Honda get in close and use his powerful kicks. No real tactics here just keep it low.

DHALSIM

VS. KEN/RYU

You must keep leaping forwards and backwards with kicking attacks to counter their Fists. Get in close and punished away with punches.

VS. CHUN LI

When she is in mid-air slide forward, turn around and punish her in the legs as she lands.



VS. GUILLE

Immediately open with a legdrop attack, then quickly force Guile into a corner with sliding kicks and long-range punches. Finish off with two kicks and punches.

VS. BLANKA

As you have to do in alternate between long punches and kicks to beat the beast. Don't jump in on him or you'll be lost.

VS. GUILLE

As Guile keeps towards you crush down and let his feet away from underneath him with a kick. Then close him with double handed attacks and repeat.



VS. DHALSIM

Get in close quickly with the rolling attack and then hammer away with lightning claws and fast kicks and punches.

VS. ZANGIEF

Blanka's a bit faster than Zangief so lure the Russian forward then hit him with electricity as he makes into you. Follow up with a wall based rolling attack as he comes out of the shock. Otherwise, keep it simple and you'll win.

VS. HONDA

Use the same tactics as with Blanka. If he does get in close use kicks of chop to force him back again and repeat.

VS. ZANGIEF

Once again the long reach of Zangief comes to the rescue. Just keep stepping at those long range attacks for victory and the mighty Russian won't stand an instant! Keep your distance to avoid the crushing attacks.





There is a place that the seasoned adventurer knows well. In those forgotten kingdoms where dragons roam and werewolves prowl, you can always find a warm spot by the bar in the Troll's Head Inn.

RULES OF THE HOUSE



3. How Wedglasses and Hatter-Plumbers will investigate will not be covered for the last unit's further topics.
4. Please enter all information correctly.
5. There is an outside subject (Puzzle one-2).
6. Information affecting only cases beginning with the letters 'J' or 'K' will be covered here.
7. Please do not and what is in the Don's Special - as it contains all the information.

HEROES

WANTED BOARD



The greatest legal responsibility is the transfer of the funds from property to the company's account. However, with the increasing power of the foreign state, it is likely to take on more responsibility.

[illegible]

THE SHRINE OF KNOWLEDGE

Kneel before the Shrine in humble penitence, confess your ignorance, and just maybe your question will be answered. Remember to always and politely and *good* the good into the better before you send it in. (Hold on, the Shrine's free. Stop trying to bump or cut into... *But!*)

1994-1995 1995-1996 1996-1997

Alan Newman from *Cosmo* has written to say that he was recently suggested by a net page. I thought all muggers were rats, but Alex is referring to the rat in *Space Quest II* which shows the player reactor from you go inside to the wrecked space ship. Alex also wishes to know whether the British would claim this game as ours, minimum or based on the ideas this type of graphic adventure but he can't seem to get any ideas with it.

The iPhone applets: The reader is the source of power for the lights in the basement. Don't you remember that? When you disconnected it, the lights went out? The app in question may fix that through reading the CSS design map (maybe I supposed how many readers of the *First* a head (certainly not rats), where you see the lights. If you return to the basement you'll find the lights are on again because the rat that put the mouse back in place. I would say the difficulty with the CSS game is not, but like all games it does have a few problems which can be anyone. Not even the CSS TV can read and has a lot more laughs. Another one of the *Sting* adventures which is even funnier is the first of the *Leisure Suit Larry* series called *The Laird of the Leisure Ladies*.

<http://www.kitware.com>

Out of the dark, Nansen enters as a Norwegian lord, a husky has arrived bearing a plea for help from Famine National. Unfortunately, I ran up nothing about his/her/his name, but I can consult the *Shrine* concerning the problems of this missing birthplace: in the *Legend of Nyanza*. Apparently, Famine is having trouble locating the bodies to give to the 'star'.

The shrine regime. As you are obviously aware, the land is full of peering gods which can be easily collected. They have a tendency to appear in the most common of places. It's a good point to remember: in search places you have previously visited. If you place the correct spirits on the altar plate they will magically light up a section of the altar. The one you select is a hint you have not found in the one which is hidden in the following spring. This is the Sun shrine which you seek.



The word and green forests of Spanish take thousands of precious games, but there is one game which not be is really difficult to find (this is the world's all of your money investment)

CURSE OF ENCHANTIA



The starting position contained within the frame of Enchantia's interface is perfect for the needs of every adventurer. The Shrine has a few pointers for you from an ageing druidess.

If you've received the questline regarding the Curse of Enchantia which has touched my heart. Out of the Mootley Woods in Kent, Damien Gregory's robes have been loud enough to be heard in the Troll's Head Inn. Deep in the caverns, Damien cannot find out how to reach the magnet which is lying on a shelf high above his head. The second clue comes from the ancient Aztec from Moctezuma who has made a lot more progress with this running adventure, but has finally come to a halt in the graveyard. Moctezuma has found the magic, glass, cross, symbols and a vicious demon, but being a pretty adventure he still wants more. A piece of garlic bread is the object he looks before he deals with the guy with the sharp pointed teeth and the fat cloak.

The Shrine replies: The solution to the magnet problem concerns the glass and the ladder. By placing the glass over the ladder you will have made a new one. If you stand on one end and throw the computer at the other end you will catapult yourself up onto the ledge. To deal with the vampire in the graveyard you should carry out the following moves. Having entered the graveyard, Look, Pick-up bone, Fight with bone. After climbing out of the grave, go right and the vampire will appear. Move quickly left and the vampire will fall to the ground. Pick-up spine and then go right. The vampire will appear, so go behind him and fight with spine. Go right and stand on the first vampire which appears behind the gravestone. Push-left the gravestone to scare him away. Go right and pick-up symbols. Go right behind the tree and pick-up cross. Go right and pick-up coin. Go to the gates at the far-right and pick-up the vacuum cleaner. Return to the grave you first appeared in and there you will see the bread and garlic. Pick this up and go right until you meet a vampire. The time fight will start, then go to the gates at the far right. A vampire will appear behind a gravestone. Come as behind him and fight with neck block. Once you have given him a good thrashing he will open the gates just to get rid of you.

WRITE BACK

If you have a problem, a notice for the Board, or perhaps you have a piece of scandal which you wish to whisper in the ear, write to: Terry Gill at: The Troll's Head Inn, CU Amiga, Peasey Court, 30-35 Farningham Lane, London EC1R 3AU.

LEGEND

An intriguing letter arrived from Peter Fiedorick of Castelford who claims that he has uncovered a secret riddle which would give him unlimited power in Mississippi's game Legend. The riddle goes like this: There was a Romanesman from TASL who kept all his riches in a bag. He added 200 for knowledge Two for wealth and Power And 3000 for ability beyond belief. Even with this precious secret, Peter has been unable to make the game paid up its secret. I had never heard of this information and was intrigued by the strange words.

The Shrine replied: Well, I have good news and bad news concerning this question. The name of the game's writer is Tag, so that explains the first unknown. The good news is that the riddle means that you can go to the general's Cotton screen and select Romanesman. Now you have the opportunity to use the Romanesman selection. If you choose the Name TAG004 your character will now have lots of gold. If you rename to TAG790 he will be able to access places that are normally inaccessible. If you rename to TAG000, he will become all-powerful, invulnerable to monsters, and be able to shoot upon locked doors. And what is the last news? This option only works on the PC version. At least, I never promised you a Romanesman. One piece of more useful information I can give you is that a certain Legend-seer called Prof The Romanesman Henson 666 Kilmorey (Bloxworth, Gloucestershire) has written to say that he has a large repertoire of spells which his friends are pretty clever and he would like to co-operate with anyone who is having difficulty with this game. He is personally having trouble in the striking sewers of Balanholm searching for a lock which will fit his key, or even better searching for a key to fit all the locks on the doors he can't open. He has planned the five levels of Legend, and scored the Dark Power. Any offers?

LORD OF THE RINGS

Carried over a cold breeze from the dark mountains of Mithras came a fantasy for help from Jake Leeder in Dorset. Jake is outside the castle Oak Dabur in the Lord of the Rings, waiting nervously that he was inside. He also wishes me to ask the Shrine how he can make the Dabur do his bidding.

The Shrine replied: It is impossible to enter the castle from the outside when the main gate is locked. (Well so much for that!) However there are two secret entrances. One is via the secret passage in the stone near the forest maze and the other is the secret entrance in the rail of High Raverty. Somewhere in the Hill of High Raverty you will receive a message that you can feel hot air coming from the east. At this point you should use a Perception skill and this will get you into the castle's eastern. Regarding the Dabur of Mithras I have this advice. As soon as you encounter this treacherous beast use the word 'Come to freeze him in one spot. You now will be able to recruit him and he will join your party. As you journey on past the southern boughs of Mithras, the Dabur will show you the entrance to the forest maze. To gain entry to the secret entrance to the castle you must get as close as possible to the north-east corner of the stone in the forest maze.

MIGHT AND MAGIC II

No sooner had one message arrived from Wales than another bearing the seal of the Red Dragon played into the welcome mat of the Dr. Daniel Foulston from Dorset found that he could suc-



The rising power of light and night can return your rat companion to those first non-operative periods into the land of strength. For your mouse and your mouse's sake.

cessfully take the Elemental Orb from its pedestal in Dorset. Current rat now has is unable to leave with it as the orb won't let him get out.

The Shrine replied: It's problems like these which are said to drive mortals mad, for the answer is really quite simple. The Orb won't allow 'you' to carry it out, but others may not have any problems. The answer is to give the Orb to a friending their stealer. The friending will return carrying the Orb with no difficulty at all. All that is left for you to do is return to the inn where you lived first and recruit him again. Of course, if you liked him at the Troll's Head Inn you just may have a lot of a problem, for Tony has just almost certainly chased him out of his business before you can arrive.

OPERATION STEALTH

A mouse code message from a suitable board reveals that Benjamin Mur in Australia is stuck for a clue in Operation Stealth. Having passed



Under your steady guidance on the Mount Shambles of the in light into adventure with Operation Stealth. Can any guide the player again through the maze of security gaps which prove the challenge of your special challenge.

through the dreaded old mine, led up the guard, given the map water, and swamped the security station. Benjamin is at a loss as to how he can get up the elevator which is controlled by the fingerprint identifier.

The Shrine replied: As it's obvious that you will need to have a copy of someone else's fingerprint to activate the door control, you will need to find something which would have a set of prints on it. If you return to the Guard's Shrine, you should be able to steal an empty glass in the arm. Grab the glass and then remove the ink from the blue-fingered fingerprints in your eye. This cunning paper can be used to lift a copy of the prints from the glass and then be used to bypass the security door.

With these few words to awaken the magical glow from the Shrine's head and dees. Outside of the two the vision is breaking over the sunning of his upgrading that another sign of danger is coming to an end. Please hurry, get up your telephones, place your ear-to-ear heads in the phone, laugh outside and prepare yourself for another day of adventures.

[illegible]



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GET SERIOUS

The section for all serious Amiga users is here again with another cornucopia of reviews. So, sit back, keep your eyes peeled and get a load of the stuff we've got for you...

- 00 MEGADEC
- 03 FLIGHTPATH
- 07 PRO GEN PACK
- 08 RETINA
- 09 BLITZ BASIC
- 04 STUDIO
- 03 \$100 PERIPHERALS
- 100 FINAL COPY UPDATE
- 104 MUSICOLOR
- 108 DELUXE MUSIC 2
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MEGADISC

Jeff Walker throws loyalty out of the window and looks at an Amiga mag with a difference.



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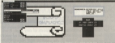
Menlo Park, Calif. Magazine is a labor-of-love in publishing, but as this one built from Australia, comes on floppy disks and is more like a massive old calendar, we thought we'd make an exception.

Launched five years ago, *Magazine* was the brainchild of Tim Strachan, who has a long history in traditional magazine publishing and is now, as it should be, producing quality publications. Focused approximately six times a year, it's up to issue 35 and has over 6,000 subscribers worldwide, mostly in Australia and New Zealand, where *Magazine* is considered to be the main information resource for the Asian

You may think that two 600M floppies is a lot to fit with articles, but amazingly each article is presented in a compact format in order to pack in as many references. A special tool called *WingView* is used to present each article on the screen.

The subjects occurred very gradually, from articles that had happened right up to experimental programming and hardware projects for experts. Each issue carried reviews of current software and hardware, comparisons between rival packages, materials on popular and some not-so-popular packages, news and tips for all manner of things, bug reports and workarounds, programming in various languages, and even articles and reviews on some very new

As media articles there are some PG and others more programs. Some of the most famous Araya programs authors are Australians - namely the Jonathan Potter LPD08.9 to name culture program, which was developed into the famous Chemistry Class [No Petros (Petros), No40, AutoCL], Track[NO], NoJerk... and Chris Hansen (Gillies), BCTrack, The 1st MB video editor PDECS, ... and then



Some of these authors have to agree that we are misguided. Other authors they want to be right about brands, and may believe they make for a better life overall.

From Australia, you might be tempted to think that a COO is what is written and not so relevant to us. Nope. But that only really applies to the classified sales and bulletin board sections, and maybe the Asian press, at the end of the news. Even the homepage stuff is perfectly relevant as they use the same HTML structure as we do.

There are no infants (over 1800) or birds to contend with, thank heavens. To our Magazine you lend from your "Waldenish" time as normal as their most close. As an ideal simply stick on icons. The great advantage of this

matter which model of Airtags you own or which version of WatchOS or iOS you have. Visit the project <https://github.com/0x09b/airtag> to see support table. Magazine will update this story.

If there is anything complicated to do with regarding an article or shipping a PCI program, capital deep-dive instructions are always provided.



Three of the advanced programs on track (2) – Mathematics, Language Arts, and Science – are scheduled for 2006-2007. The remaining two (1) – Social Studies and Health – are scheduled for 2007-2008.

The LBO distributors for *Megafix* (Chicago Thompson Services), are so determined that every foreign owner should at least experience *Megafix* once that they are giving away a back issue (absolutely free). Send a check (not a self-addressed stamp) to the address at the end of this review and fill some back-pastoral with articles and reviews.

—your wedding how it is managed in just 60 short days. And there's enough in each issue to keep you going for quite awhile. Register now until the end of October to receive

Contact: George Thompson
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Mass 01752. TEL: 617/237
1010. Price: \$7.95.

FLIGHTPATHS

Nothing at all to do with aeroplanes, Tony Morgan comes in on a solution to one of SPaint's problems.

One of the dedicated animation packages on the market, Deluxe Paint IV is surely the most popular tool among Amiga artists. It shares most other animation systems' basic common sprinklings of drawing functions, most rely on pre-drawn backgrounds and objects. That means using another piece of software to originate your graphics, and that can be very awkward and costly—consuming if you have to jump back and forth between two programs.

The beauty of SPaint is that it's an art and animation system in one. Some of the animation features aren't as developed as those on the dedicated animators, but SPaint's got the massive advantage of being easy to use. Any ideas you have can be tested out instantly, as you don't sit up-waiting valuable time carefully crafting a sequence that could turn out to be a load of rubbish.

It's not all plain sailing, though. Some of the more advanced features aren't as pretty daunting. Even when you've worked them out, actually getting the results you want is often far from easy. One such feature is the MOVIE option, designed to help you get brushes flying around, in and out of the screen, without you having to paste down each frame separately. To get it working manually, you've got to input a whole load of angles and dimensions, which is a bit of a headache for most of us. To help you get around this problem, Meridian Software have released a range of pre-

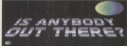
programmed 'flightpaths' for use with SPaint.

Flightpaths is a few disks, but the first is a little odd—around 80 flightpaths, while the second is home to some fancy colour fonts, plus a lot of the standard Windows fonts. All the flightpaths are listed in the manual, with descriptions of what each one does. Fortunately, they've been saved with reference file names, such as *Bluearc*, *Curve*, *Hi* and *Turnleft*. Fast and Simple.

There are no brushes included, but you can use the fonts on the second disk to fit them all out. Most of the flightpaths are well suited to presentations and video filing applications. The step-by-step walk-through words guide will, showing how easy it is to get files (and any other graphics you fancy) spinning in and out of the screen. Also included with the disks is a tutorial demonstration video, to get you up and running as quickly as possible. The video is available separately for £10.95 (plus £1.50 p+p), which you get back if and when you decide to buy the whole package.



The disks aren't exactly state of the art, but you can sleep easy now.



These disks are like a little bit of the art, but you can sleep easy now.

There is a lot of it as a kind of clip art, made up of art and motion camera movement of actual graphics. It's a good idea, and one that works well. It's a bit pricey, but if you're into animation or video filing, you'd do well to take a look.

Contact Meridian Software, 8 Gurney Crescent, Littlehampton, Sussex, BN15 5AL. Tel: 0432 863601. Price: £88.95 plus £1.95 p+p.

77%

PRO GEN PACK

In an effort to set up his own video studio, John Kennedy grabs a genlock pack.

If you read the CU Amiga guide to Creative Video you'll already know what an exciting device a genlock is. The ability to add computer graphics over the top of an already live video signal can revolutionise home video productions.

What you won't know until you try is just how good all the tools and software you also need

can be a frustrating business. You need tools to carry the Amiga signal to the Genlock, tools to convert the Genlock to the video camera, and leads to carry the overlaid results to a video recorder.

Some video recorders use SCART sockets, some use BNC-style phone plugs, but by definition that use the type of connectors that you don't have, and couldn't possibly get until after the weekend at the very earliest.

One of the few dealers to have recognised this problem is Gordon Harwood Computers, who have put together an all-in-one genlock solution. The Pro-Gen Pack consists of the genlock itself, a large collection of leads and a decent (paid) package for filing—in short all you need to begin filing the video day.

The Genlock is the Pro-Gen model, which despite its low price produces some very stable results. In fact, its genlock images you would need to spend considerably more. In our tests, even our recorded video—intentionally difficult to genlock—produced excellent pictures.

Although Pro-Gen has no external controls for altering levels and

levels, an external feature (software control) is possible by means of a special cable. When connected to the Amiga's parallel port, control over several operating modes is possible: Normal Background modes, Amiga only, Video only and two-level Foreground modes. The Foreground modes allow the live video to show through colours other than 0 and can produce quite rather nice special effects (importantly, the software is only menu driven and not menu controlled, which limits its usefulness).

The painting software provided is Photon Paint 2, which is perfect for creating titles. It's also perfect for creating more extravagant images—for example, you could paint a space ship floating above a strange alien planet. My using Photon 2 is the other weakness, you can genlock live actors into the clip. With Photon Paint's animation facilities the best-looking could be missing—that is, if you have an older Amiga, for Photon Paint's animation doesn't appear to work properly on post-1.2 machines.

The most welcome part of the package from my point of view was the excellent set of cables. With the adapters supplied, any combination of SCART, Phoenix or BNC equipment can be mixed and matched. The only omission is the addition of a connector at the miniature port that some cameras use—luckily most cameras come with an adapter as standard.

The Pro-Gen pack is a perfect way of getting in home-video filing and special effects with the minimum of fuss.

Contact: Gordon Harwood Computers, New Street, Alton, Berkshire RG15 5HP. Telephone: 0773 686731. Price: £24.95.

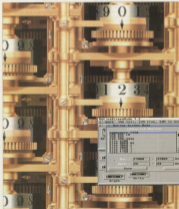
84%

If you really want to set up your own home video studio, then you'll probably require a more advanced pack. But this is an excellent package for all might-be producers.

Some programs, like *Illustrator*, can be forced to open a multi-panel window, and can therefore benefit from the increased resolution, although *Illustrator* did refuse to work in Retina.

When is an accelerator
not an accelerator? When
it's a graphics card.

Retina



Monitors are becoming well known in this country for producing some high quality hardware. When the makers of the excellent *Hi-Lab* came up with a high-res graphics card, it's time to sit up and pay attention.

The Retina is actually a three-mode display, as it works in 8-, 16- and 24-bit colour. What is the point of working in 8-bit colour if you already have VGA graphics? Well, this Retina isn't just a colour board, it also functions as a resolution enhancer and a SuperScan.

In fact, looking by the manual, the most important of these is the resolution-enhancement. Using a reconfigurable graphics library and a special 'non-matrix' program, the Retina does virtually all software to take advantage of an increased dot resolution.

This program keeps track of all the applications when allowing to open screens. By interrupting the graphics card, a screen can be opened through the Retina card. Big deal, you may say — but the advantage is that, if the application can handle it, this resolution can be up to 2560 pixels wide and 1024 pixels deep, giving a suit total of 2.6 million pixels worth of display.



In Direct mode many of the high-resolution screens available are inaccessible.

Just this is getting towards the limits of the resolution of an image which can be displayed via Retina.



The standard window allows you to specify display parameters for each application when it opens a screen.

This works especially well in Workbench mode. By editing the Workbench preferences, simply enter the Workbench screen size to be, say, 1024x768 instead of the default settings. No problem, thanks the Amiga, it's obviously going to be one of those scaling window jobs. But when you run RetinaPlus the screen appears in its full glory. The Workbench isn't distorted, because when you apparently reach the edge of the screen the scaling instructions are interrupted by the Retna software and simply ignored.

The result of this is that any application which can normally be run on the Workbench window will automatically be able to take advantage of the full screen resolution.

THE DOWNSIDE

Unfortunately, any programs which attempt to operate directly with more than 16 colours can run into trouble. MergePlus suffers from this, as does Personal Painter and other graphics packages in the regular colour modes. They will run fine, but the picture is reduced to a one-colour image (i.e. black and white). This is a bit of a drawback to most art packages, especially when editing colour pictures.

However, these packages would not usually derive much benefit from the enhanced resolution.

WHO NEEDS MORE BITS?

With the advent of the 68010 version AHA chipset it is a valid question to ask whether we really need 24-bit graphics any more.

In fact an entire picture only needs 32 bytes. Many people were able to display the difference between a 24-bit image (16M colours) and a 24-bit one (16.8 colours), so that it is quite possible to be able to get all the colour in one screen display.

Perhaps the AHA chipset has reduced the need for an odd or greater display. But I haven't noticed it really, especially when the last does more simply add a few extra colours to the image. As we know now, Retna acts as a filter-free, a resolution enhancer and a translator, so it is interesting the higher depth of its image.

In the world of AHA, BPP and graphics design there is always going to be a need for the full range of colours. In the average home there probably isn't - but that's again when you last time you bought something for your computer (and probably will).

Amiga can always be treated in these packages in the normal way and then displayed on the Retna card later on.

Although software which opens a custom screen can also be forced onto the Retna card, they are often unable to take advantage of the extra resolution in that way. You can ask Professional Draw to run in 1600x1200 mode if you like, but if you don't tell it to run through Workbench all you will end up with is a tiny square in the top left-hand corner of the screen. But the software is actually using Retna mode to 'scale' the graphics of a program, it simply doesn't take advantage of extra space - if they choose not to there is little to be done.

NO MEMORY

By using up to 4MB of onboard FastRAM images themselves take up very little of the host machine's

VDPaint

VDPaint is bundled along with Retna. Although not formally supported, it is largely bug-free.



VDPaint & RETINA

Bundled with the Retna card is VDPaint, an interesting paint package. In spite of its rather unfortunate title, it is really nothing to be ashamed of.

A rather interesting approach to the user interface means that all menus and tool sets are performed on a command system, which is controlled by the right mouse button. Although this does give an impression of the package whilst in preparation, it is also more than a fast reworking.

The features of the program are not quite up to the standard of packages such as TPaint, but they are all slightly beyond the simple marking about level. I found the general aspect of selecting colour ranges and, coupled with the brush, some penboxes and painting modes, this means a great deal of flexibility. Unfortunately it is also a rather tedious task to set up one of these effects.

The shining star is definitely the artwork mode. With its feathered edges and delicate tools it is perhaps the closest you can get to the real thing on a computer. Combined with a graph-

ics tablet, any artist could run through the usual repertoire of effects with ease.

VDPaint does support the JPEG image format, which is almost designed for high resolution image work on an Amiga these days. It's no-use spending months on a stunning creation that would knock the tiles off a Macintosh (that's the Planetscope series, not the turtle) if you discover that your file is over 10MB and there's no way it will fit on a disk. JPEG is a form of image compression which is particularly effective at smoothing down realistic images (i.e. ones with lots of smooth shading to realistic sizes). A 90 per cent reduction in file size is not unusual.

The package also supports standard PIF and 24-bit TIFF formats.

On the whole, VDPaint is rather reminiscent of DigPaint. It has a very potential, but is less than intuitive in many ways.

The package also supports standard PIF and 24-bit TIFF formats. It has great potential in some areas, but some simple efforts are left unreported. I haven't given the impression of a finished piece of software, but believe more like an early version which lacks features intended for release.

BACK TO V-LAB

Incorporated into the VDPaint control panel is a gadget for controlling V-Lab hardware if you should happen to own some. V-Lab is the most excellent video digitiser (reviewed in the August '90 and January '93 issues) ever to come out of Germany. It is also the best video digitiser ever to come from anywhere, and since it was also made by Image Systems it is only reasonable that there is an interface for it. One's can be obtained from this interface and will automatically be displayed on the Retna once they are connected from TVR values.

V-Lab has excellent video copying and artwork systems - the V-Lab hardware could be of some benefit though.



JARGON BUSTERS

- **VCR** - A term used to describe video systems which have these standard controls. Instead of RGB they are connected to four different monitors, the idea being that it is easy to select a monochrome image from four as well as a colour one.
- **AGA** - The new chip architecture in the 0300 and 4400, which allows new displays with up to 256 colours for 1024x1024 pixels.
- **Enhanced** - The most expensive 34-bit chip package is 68K, originally developed for the 486-compatible card.
- **256K** - A standard file format for 34-bit monochrome images. Enables a 640x480 resolution in 16-bit space with 64 bits of parity.

storage capacity. This is quite useful because when you start running applications in 34-bit colour at a screen resolution of 1024x1024 pixels, you soon discover that your system isn't quite as well equipped as you thought it was.

Another bonus is that the memory has a faster access time, allowing a decent rate of refresh on the Helios display. It also means that screens can be buffered - very useful for animation, because a second image can be built up in the buffer while the original is being displayed. The memory on board is arranged in 256K packages and can take configurations of 1, 2 or 4MB. You should really have at least 2MB, otherwise some of the display resolutions will not be available. Remember that a 34-bit 1024x1024 image takes up nearly 2MB...

SUPPORT

Helios comes with several support files. As well as the *HeliosUser* and *HeliosUserMode* programs, there is a display program for simply viewing 3D images with the card.

All 3D models are supported, including 1-bit, 8-bit and 24-bit files. There is even support for the 3D-CLASS format which can be loaded faster than dxf and the uncompressed Superstar format. Images can be premapped using Helios display, by giving a list of files to view. Double buffering is also supported to prevent unwanted flickers whilst the images are loaded.

As well as V-Lut support, there is a number of files which allow direct support for the Helios board from programs such as 4D, Pro and Imaginision. Even if your particular piece of software doesn't support the Helios directly, the card comes with a Heliosgen library, which should then reliably allow it to work with any Heliosgen-compatible software.

MONITORS

Helios comes with two monitor connectors, which open the door to a wide area of use. This means that you really ought to have a decent monitor to display your images.

Most of the screen modes are available to virtually any type of 1024x1024 pixel monitor, and many can even be displayed on a standard 512K Amiga monitor, although a special video will be required to connect to Helios and to give signals into the composite video output.

The higher resolution displays are idealised, so if you want to work in any high resolution mode, trying to work using a special display which can substitute the image.

Because some applications may not function properly under Helios, it is worth considering that you'll probably need two displays - a monitor for the Helios and another display for the normal Design picture.



The advantage of a large workstation is obvious to anyone who has tried to multitask several programs on one and transfer data between them.

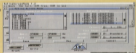
INSTALLATION

The Helios Card will fit happily on the Zero slot of any Amiga that has one. It is a simple matter of loading a few slots and plugging the board in. The software comes a standard install program, so all the drivers and drivers are neatly loaded within about five minutes of starting up.

Last time an application which is unaware of the Helios is opened, the Helios software program will attempt to open up the external screen. This can then be changed by setting up the Heliosgen program using a Helios if you wish and setting where the camera is to appear on the standard Amiga display or through the Helios and what screen size to use. It is as simple as that.

CONCLUSION

The potential of the Helios board is really quite staggering, in addition to being able to support 1, 10 and 24 bit graphics in a variety of resolutions it is also capable of enhancing existing graphics. The shortcomings of this system may be slightly limited at the moment by the standard software packages available, but as new versions of Workbench will come with respectable graphics as standard, it will soon work with all major products.



The screen mode-dependent software used with Helios screens will be updated. The types used here depend on your monitor, but the maximum resolution is 1024x1024 pixels in 24-bit mode.

The intelligent refresh of the display enables it to keep pace with almost the most demanding of tasks. The refresh speed is not too fast, even when operating direct from the RAM disk of an A4000, but this is more a limitation of modern the than any particular fault of the Helios.

The most amazing thing about the board is the astonishingly reasonable price. It is not a broadcast quality unit, but the craftsmanship, but it is more than adequate for most purposes.

AMIGA POWER WORKLOAD (3442/1140)

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SLE, TEL: 085 507 1061

EASE OF USE *****99%

It really is a simple matter of loading in the card and running the install program.

VALUE FOR MONEY *****99%

It's simply unbeatable for price and performance for its class.

EFFECTIVENESS *****99%

It isn't the fastest thing you can build, but the design is clever and solid.

FLEXIBILITY *****99%

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OVERALL

91%

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 CARD ORDERS

Of course, what makes BitBlt faster than any other implementation are the huge number of *range-specific* commands which allow intimate control over the hardware: sprites, color images, copper lists, sound effects, sprites and keyboard routines – they are all here in abundance. ¹⁰ For example, loading an 800-image directly from disk and displaying it is handled with only one or two lines of BASIC.

When they're not all there – for example, a 500kbps or 100kbps download speed – they can be added with the addition of some Xpress. Both these Xpress were supposed to be added with the same membership, but I don't know if you'll experience with that copy of this. Same, no ads.

If that one missing routine is still driving you batty, adding your own by means of the integral is, in a sense, as simple as possible. Although hardly recommended for the beginner, adding machine code to your programs will bring away some of the load of your Amiga and provide you with local hardware support. If you combine it with Edit Basic, I can't see the three

Support for the A/GA capabilities of the new Springes (AI 200, 84000 and 88000) is comprehensive in its absence. However the beauty of the 88000 Basic is that support is very easy to add after the event, by means of the Springes. If there is something special you have in mind, you can feel that a library is either



None of the options provided to the compiler. Options such as `/runtime` force the compiler to use a particular runtime library, but the compiler will not use any of the options provided to it.



These heat-curable resins are the first chemically-cured with little shrinkage. They come in varying viscosities and are available in both glass and a tough, sand-free flowable version.

available, or shortly will be. If the second comes to the aid of the first, you can have a whole lot of rolling your own — the other Guide shows you how. One of the respondents I was supplied with included a serial driver, ideal for editors: a few years' work on the way to a new machine.

Designing intuition screens (screens, windows, pop-ups and so on) is such a common and tedious task that often these come with a point-and-click program that will do all the work for you. A click here, a drag there and the source code is automatically produced, saving hours of work. A similar set of programs will create maps for you, ideal for creating different levels for games.

The demonstration programs provided with *ISIS* itself are nothing short of amazing. For starters, an available test version of *Endsley* proves that speed is not an issue. A spreadsheet program will keep the application programmers happy, and for the more technically-oriented a digital-signal simulator and 68000 assembler should destroy any doubts as to the power of the language.

Acad Software produces a newsletter called *3000 Users*. Each issue is packed with examples, bug reports/fixes and news. Tell us that, too, is supplied with images you're running up-to-date with the latest releases. www.acad.com.

If you want to know exactly what makes the strings tick, without having to buy 18 manuals and learn assembler and C, there is no better way. You talk with whatever staff of program you want, see it in action, in many, or various of its applications.

The early dramatists are those of the *Amiga* and *deMoo* language team. If you want a program to do something useful once, you'll find a way with this fluid, if idiosyncratic, beginner- and expert-level, and what's more it produces true Amiga software. Get it (the U.S. distributor has been hard to get, but we'll have you informed as soon as it's back in stock).



Following the completed 2003-2004 season, the program will continue the research on the effectiveness of the community-based intervention. The data from the 2003-2004 season will be used to evaluate the program's impact on the community's health and safety.

There is heavy reporting from companies, and it's this the more popular is particular companies, the results the general

It all started when the OIA and Spectrum were overwhelmed with inquiries to the September 11, 2001, attacks because one of the most successful telecommunications firms. The network was up and had been used by the FBI to track a large number of calls to the 9/11 attacks, including the 9/11 attacks. The FBI and the FBI appearing in court to prove it was a conspiracy. Many people were told, but how many people do you know actually

Only those firms that "could be the first to provide significant progress in sustainable and profitable growth" could also be the only firms willing to work with programs, say, energy, climate, or the environment, to enhance the bottom line. Because the impact of such programs is easily lost in a sea of red ink, the firms that survive will be those that have the most sophisticated environmental programs. These firms will not only overcome environmental problems, they also will be able to take advantage of the opportunities that will be created.

And the Anapa is different, and a rare Anapa mare. They know their computers, it's all the best machines. It's a job of all kinds, but it's the best of the best. The best machines are...

The Indians in each of the 150 communities that people come to know more about it. They want to use it their way, to use their programs. As an exchange, they look back to the Americans, open a front window, and now Indians every day are going to the United States to get up immediately and that, that's the American community.

Basically, we cut off access to the Internet during the experimental response time on SASNET (the green bar) and we remove the Internet connection on the target's network and restore it only at the end of the experiment. The response time increases and produces nothing which could be easily seen by any potential attacker. But, unfortunately, the target is still with others.

[illegible]

The real beauty is paying the market for an easy-to-use programming environment. After ten languages, software can disappear for good. And, not necessarily obviously. Many have new features every year, and the new improved version looks like using the first was just to start using what things do for you (you want).

ROOM	ROOM	ROOM	ROOM
ROOM	ROOM	ROOM	ROOM

Journal of Management, 1998, 24(4), 469-484
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PULL-OUT HAND-HELD MAGAZINE



A1200 Peripherals

MBX 1200

If you have an A1200, chances are you are only using half its potential. John Kennedy checks out two of the very first A1200 peripherals.



Once the novelty of using the excellent Workbench 3 environment has worn off and you start using your A1200 for some serious computing, you may be in for a shock. Although advertised as a 5.133-MHz power house of a machine, Commodore's new home computer has a few more points, not least that it runs at almost half its possible speed.

This is mostly due to the fact that its DRAM-based memory is totally given over to Graphics memory, and also because adding a maths co-processor is practically impossible.

As ever, what Commodore fail to provide, the third party manufacturers are only too glad to offer. The first to make a splash was the MBX 1200 from Microbotics, a combined co-processor and memory expansion.

TECH SPEC

The MBX 1200 comes with a choice of memory configuration and maths co-processor. As the maths co-processor (Floating Point Unit) seems to be compulsory, unless you plan to make extensive use of image rendering, ray tracing and morphing packages, you would be well used to get the simplest (FPU) available - a 148800i option.

Faster 68000 and 68000s won't make as much difference as the addition of any FPU in the

first place. If you plan to use your A1200 in a situation where processing time is a prime factor, a 68000 will run at least five per cent faster. Upgrading the FPU after purchase is possible, and a spare socket on the board is available if a faster clock crystal is required.

FITTING

RAMs being what they are, I should go so far as trusting my mother to fit one to the MBX board. If you buy your MBX and memory together, you probably won't even need to ask her, as the dealer will have already fitted it.

Inserting the MBX 1200 is a different matter entirely, but it will only involve turning the machine upside down, opening the topdoor with a few gentle pricks and spending 15 minutes slotting the Card into place. If you have a weak heart, any dealer worth his salt will be able to fit the board while you wait.

Replacing the plastic hatch and switching on will result in nothing more exciting than a large number appearing beside 'other mem' in the Workbench file list. Everything else will appear as normal - except, of course, when you begin to use your favourite DTP or graphics programs.

MBX 1200 PRICE LIST

	148800	68000
MBX	£139.95	£139.95
1MB	£29.75	£29.75
2MB	£39.95	£39.95
4MB	£49.75	£49.75
8MB	£59.75	£59.75

MEMORY

Purely as a memory expansion, the MBX may seem a bit pricey. It's also extremely limited in that it only offers one 68000 slot. This means that you can't expand memory in increments as funds allow, rather you buy a 1MB, 2MB, 4MB or 8MB, and jump it when you want to upgrade. As the memory added to the MBX is fully auto-configuring 80 or Fast Page to speed to almost legendary. Any memory added here will almost double the speed of the A1200 when non-games software is used, although programs such as Grand Prix and some flight sims also show an immediate improvement.

If you already own an A1200, buying an MBX populated with as much memory as you can afford will certainly answer your processing needs in considerable time to come. Add a hard drive and you have a system which offers exceptional power at very reasonable cost.

DIAMOND COMPUTERS (VARIOUS)

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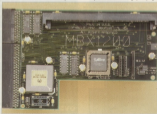
USE OF CPU

Quite good to sit on the laptop
VALUE FOR MONEY *****
 Quite expensive, but gives you the A1200 with top
EFFECTIVENESS *****
 Modern increase for all non-games software, about 20
 games speed-up
FLEXIBILITY *****
 Although massive RAM/co-processor expansion, no better expansion is possible
INNOVATION *****
 No does not actually cut the cost, useful expansion for A1200

“ Doubles the speed of the A1200 – at a price. Limited in its overall expansion. ”

OVERALL

78%



The MBX 1200 comes in a variety of configurations. Here you see the one with a 148800i FPU. It is fitted with 1MB of DRAM, and a spare socket for a faster clock crystal.

A1200 IDE DRIVES

Transmagicians can't complain all they like that the IDE hard drive interface is a whole new world to PC386, but they can't change the fact that for the first time entry-level Amigas are

equipping with hard drive interfaces as standard. The A6000 comes a PC with its integral interface, and the A1200 comes on the standard. To transform your machine into a workstation, you just need to buy a hard drive and cable and plug them in — no other hardware is required.

TINY

The drive's form factor is minute 3.5 inch machines — that measurement is the size of the internal disk platter. The height is less than an inch, and they can easily fit inside the A1200's distinctive case with room to spare.

If you opt to fit the drive yourself, you'll find that your official on-site warranty from Commodore will evaporate when you remove the Amiga's top.

JARGON BUSTERS

- **FORMAT** — A measure of the way in which memory can be organized. 32-bit memory can be used twice as quickly as 16-bit memory.
- **CPUs** — Central Processing Unit. In the A1200, it's a Motorola 68020 running at 14-mhz or at 16Mhz.
- **CPUs** (State preservation) — A special chip which works with an A6000 or A6001 to speed up mathematical operations. The two drive controllers on the Motorola 68010 and the A6001. The latter is slightly faster.
- **IDE** — An up-to-date PC-style standard for hard drives.
- **MS-DOS** — Small Computer Systems Interface. A faster and more powerful interface for hard drives and other peripherals, allowing up to seven drives to be shared.
- **RAID** (Redundant) — A single hard drive can be split into different software partitioned. These software appear to the computer to be separate drives.
- **RELIABILITY** — An, a measurement of lifespan. A1200s that last less than 100,000 hours have drive about 100,000.

cover. This doesn't do a worry, as it's instantly replaced with a back-to-back warranty offered by the dealer you bought the drive from. The design is very tried and tested having been used in portable PCs, so it's quite unlikely that you will find the drive itself is defective.

The entire booting operation takes less time than it takes to fit an 8MBx120M memory expansion. First you remove the screws around the bottom of the casing, then you lift the top off, insert the small cables, press in the fixing bolts and replace the lid.

When you power up, you'll notice three things. First, your Amiga now sounds like a fridge as the drive starts to spin. Secondly the up-to-now sluggish hard drive (IDE) on the keyboard starts to flash and finally, you'll never again experience load so quickly.

IN USE

The Amiga's operating system is as powerful and geared towards hard drive use that your productivity levels will soar. Operations that would have taken a whole day can be achieved in half an hour.

Choosing the size of your drive is tricky. It's generally believed that 20MB is far too small — after all, most of us have more than 20 floppy disks. 40MB is getting there, but 60MB or 80MB is a good starting figure if in doubt, get a bigger one. Booting with both mouse buttons held down will present you with the special Diskman menu system. From here it's possible to disable the hard drive, and although it will still do its fridge impression, it won't be available for use. Having a hard drive may otherwise cause a problem with some games software, but then again, no drive having an A1200.

SPEED

Under DOS, the IDE standard is geared towards PC compatibility and is therefore only 10 MB/s max. The drive wasn't the quickest I've ever seen, but it was only about 20 per cent slower than my QVW A600-40+. To be honest the speed decrease went unnoticed until I ran the speed testing software. Taking the faster drive in the A1200

THE PROS AND CONS OF GRAPHICS MEMORY

When it comes to video card types, they have not changed much. There are four main types of graphics card: VGA, SVGA, and DVI. Each has its own set of advantages and disadvantages.

When it comes to graphics memory, there are two main types: VRAM and DRAM. VRAM is used for the graphics card's own memory, while DRAM is used for the system's main memory.

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into account, most operations seemed a lot quicker, even if they actually weren't.

The special hard drive installation software is still a grey area, and probably will be until Commodore start selling it (20000) units. Luckily, the A4000 software seems to do the job — in fact it was a tweaked A4000 disk that Commodore sent to us.

The disk contained the installation software and a hard drive tool kit and backup program. Most users will already have performed the installation process, but the extra software is useful if you need to alter the number of partitions on your drive. Usually the drive is formatted with a small partition containing the actual system (20MB), a partition for the user's data (40MB), and a much larger one for all your applications.

DIAMOND £179/299

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LIST OF USE

Using an Amiga, using it in a home

Using it for work

Using it for education

Using it for business

Using it for entertainment

Using it for research

Using it for development

Using it for testing

Using it for training

Using it for documentation

Using it for communication

Using it for collaboration

Using it for innovation

Using it for improvement

Using it for optimization

Using it for personalization

Using it for customization

Using it for configuration

Using it for installation

Using it for maintenance

Using it for repair

Using it for replacement

Using it for upgrade

Using it for expansion

Using it for integration

Using it for interconnection

Using it for interaction

Using it for intercommunication



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Final copy Update

Jeff Walker discovers the latest version of Softwood's wordprocessor supports so much more.



Graphics editing and positioning can be done by hand or with the L&L coordinate system. In either case, existing graphics can be imported into Final Copy.



Right-click on the graphics area to view the coordinate system, or use the menu to view the coordinate system. In either case, existing graphics can be imported into Final Copy.

Final Copy 1.0, as its name suggests, is a word processor dedicated to producing high-quality printouts. It contains all the basic text editing features expected of a word processor — cut, copy and paste, find and replace — plus features for formatting individual paragraphs, blocks of text or the whole document, and, of course, a spelling checker and thesaurus. It is proper in the recent spirit of what the two is called: *Final Copy Publishers*, a full-way house between a standard text processor and a DTP package.

NEWSLETTER COLUMNS

Up to six columns are supported should you want to produce a newsletter-type document, and graphics can be imported — anything from simple icons and white IFPs up to full-colour, including 256-colour and Hi-Res graphics. Graphics can either be saved as part of the document, which is a better way to work with images as it keeps all elements of the document together in one file, or just the file to the graphics can be saved (in the path and filename), which makes for smaller document sizes and it is handy way to work if you have a library of often-used graphics on your hard disk.

Illustration aids are provided for drawing lines, boxes and ellipses, filled or unfilled. Text can be made to automatically flow around the contours of these graphics, or instead imported IFPs. Graphics can be saved and positioned by mouse or by entering measurements and coordinates into a coordinate system. There's even an 'on foot' — an icon that sits on the actual page size on which graphics can be temporarily placed.

This graphics support is 70 per cent of the way towards what you would expect from a full-blown desktop publishing program.

TYPE AND STYLE

Typeface support, likewise, is closer to DTP than word processing. As well as Softwood's frame-based outline typeface support, PostScript Type 1 support

has now been added. As there are thousands of recognised P10 and character Type 1 typefaces available, *Final Copy 1.0* means that the most comprehensive typeface support of any Amiga wordprocessor. The program even includes a style logging system that is more powerful than that of the Professional Page-DTP package, and there is means support via Affix should you want to write scripts that perform automatic or repetitive tasks.

Five families of typeface (serif, sans, bold and bold italic) are provided in the built-in outline format, plus a Symbol typeface, making 21 typefaces in all.

Pointing to its predecessor in the normal Amiga way, the *Final Copy* is used moving the outline typefaces, everything is output to graphics, which takes longer than normal text printing, especially at the highest resolutions, but the results are always worth the wait. More and colour PostScript printing is catered for, and the Type 1 typeface is used in a document it is automatically downloaded as part of the PostScript file.

CONCLUSION

Final Copy 1.0 is not just a desktop publisher as a word processor. It can do a lot, in fact, in many areas it has replaced the normal word processing way of doing things with the DTP way — address the style tags, the drawing tools, and the optional coordinate system for graphics saving and positioning.

The program has been criticised for being short on professional features like footnotes and tables creation, but looking at the Affix support I can not see why these features, and many others, can't be implemented as Affix macros. Perhaps Softwood's next move should be to include a library of such macros with the package. If only to complete in the 'features provided' department with its *Object-Oriented Wordworks*.



The new PostScript Type 1 support allows you to use the thousands of recognised P10 and character typefaces that are available in the format.

JARGON BUSTERS

- ♦ **Affix** — a macro language, derived from Affix, which is used primarily in the Amiga to interface between different applications in software, hardware programs.
- ♦ **Style logging** — a system for automatically applying a series of styles to text attributes (size, font, etc.) to achieve text styles, such as headings, subheads, etc.

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Deluxe Music CONSTRUCTION SET 2.0

With his heart positively beating a tattoo of anticipation, Mat Broomfield visited



Electronic Arts to see what has probably been the longest awaited sequel in computer software history.

Way back in the Amiga's Jurassic era, music packages were rare and far between. In fact two programs ruled supreme: *Simos* and *Deluxe Music Construction Set* (DMCS). Although *Simos* had much to recommend it, DMCS stood proudly above the competition, and it still hasn't been beaten.

If you're familiar with the Amiga music scene, you might be wondering how it could make such a bold statement: after all, these days we are spoiled with packages such as *Orchestra* which take you play eight internal samples at a time, or *Bliss* and *Power Pro*, which boast superb sequencing abilities. DMCS may never in direct competition with these, it lived into a niche which it occupied for itself.

DMCS 2.0 is a traditional musical notation editor — it lets you create music by entering notes on a staff (rather than by playing in real time or entering notes as a sequence of numbers). This has several



Although there are many fine new alternatives to the program, hundreds of musical changes assure that *Deluxe Music Construction Set 2.0* won't be the last you see.

advantages — you can lay in sheet music by copying exactly what appears on the sheet, traditional notation gives a more visual impression of the structure of a piece, allowing you to compose your own music more easily, and your compositions can be printed as ready-to-play staves.

LIMITATIONS

Although DMCS could perform some rudimentary MIDI functions, tunes were limited to eight staves

which tended to make all but the simplest creations impossible. Now, after a five-year gap, Electronic Arts have finally decided to release an updated version — but is it a case of too little too late?

Although it's not yet complete, this program's pedigree is immediately apparent. The screen colours have been changed from a kind of post-modern, acid combination to a much more tranquil mixture of blues and whites which are almost, but not quite, standard Workbench 2.0 colours. In keeping with this new handy image, all of the buttons and gadgets are now three-dimensional, which makes a great difference, enabling you to quickly identify which selections have been made.

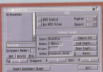
The most important part of this program is the score window, where you will place the notes, only

INSTRUMENT NAMES

Two features that really impressed me with *Deluxe Music Construction Set 2.0* is the way that more than 1000 names are used in the new program. Instead of abbreviations or initials, names are designed to be descriptive. Names, which also mean that will ensure no part tries to indicate that a particular section should use that notation.

For example, imagine that you're building a new melody, you may choose to select a half-note instrument name of "Melody". This can save some trouble when you select, indicating the notes that should be played with the frequency.

When subsequently deciding you don't like the first notes chosen, you may select, for example, a still abbreviated, albeit reduced to 1/2, a single-note appropriate with instruments like "Lead Melody" and it will replace your previous notation. An additional advantage is that notes can now be changed individually without a full-on get a full edit.



The instrument name generator has some important new capabilities. The package can handle new or custom names for samples. New sample names can be added to the list of instrument names. Also, instrument names can be changed to suit your system's list of notes.



Notes are numbered independently, so the way that notes are placed on the staff makes it possible to place notes with the ability to perform extended note selection.



The player piano is still present, but now you can also use it to enter notes into your score.

individual staffs. This occupies the majority of the video display and superficially has not been altered. However, one major improvement is the fact that the maximum number of staves has been increased from eight to 48. This means the MIDI users can not only support 48 notes at a time, but they can use it to support staff for each one. This improvement alone is enough to make the program worth buying as this was one of the original's few shortfalls. In fact the maximum level of MIDI polyphony is 48 notes spread over 16 channels.

KEYBOARD

A miniature piano keyboard appears below the score window. In the original program this showed notes as they were played and it could also be used to try different notes before placing one of them onto a staff. Now notes can be entered into a score directly from this mini keyboard, not only the desired keys and the appropriate notes will appear on your staves.

The new version of *Deluxe Music* will contain additional expansion packs and add-ons, including a screen note for (polyphony), a double dot, which increases the duration of a note by three quarters, an accent (horizontal), legato, legatissimo and portato.

Of course, there's far more to the program than the relatively limited number of options contained in the two windows. There will be eight menus, each packed with options, although many of these will be familiar to users of the original, the way that they're structured has been vastly

improved. For example, when you select the instrument, an entire sub-window will open showing you great control over both sampled and soft instruments.

The first instrument requester lets you specify the instrument position (part), the tuning and transposition of all instruments. The port feature is useful because the original version of the program simply didn't make allowances for stereo-output, and consequently notes were simply played out of the left and right sound channels randomly.

One particularly annoying notation restriction in the original package was the fact that it was impossible to define beams, summing a rest. For example, if a piece of music contained a quarter, a half and two more quarters, the three quarters couldn't be beamed because the rest interfered with the process. This fault has now been rectified.

MIDI SUPPORT

MIDI support has been greatly enhanced, and although it isn't a sequencer, it can accept real-time input from a MIDI device such as a keyboard or guitar. Users also perform limited quantization, notes can be tied. These features weren't fully implemented in the version we saw, so they have to be taken on trust. However, they're not all that great. *Deluxe Music* is a notation package, not a sequencer, if you want extensive real-time input options you are more likely to buy *Sam and Pope's Deluxe Music* can support standard MIDI files from other

sequencers, as it's feasible to buy this package purely for notation editing or printing, and will use a dedicated sequencer for real-time composition. Surprisingly, *Deluxe Music Construction Set 2.0* only sports a couple of major improvements over its predecessor, although these make a huge difference. What really counts is that the program contains hundreds of minor (sometimes cosmetic) changes which between them prove that it's the sum of a program's parts that make the difference.

Feature	Original	Version 2.0
Staffs	8	48
Channels	16	16
Notes	48	48
Rests	48	48
Beams	48	48
Accents	48	48
Legato	48	48
Legatissimo	48	48
Portato	48	48
Double Dot	48	48
Staccato	48	48
Trills	48	48
Slurs	48	48
Phrasing	48	48
Rehearsal	48	48
Repeat	48	48
First End	48	48
Second End	48	48
Third End	48	48
Fourth End	48	48
Fifth End	48	48
Sixth End	48	48
Seventh End	48	48
Eighth End	48	48
Ninth End	48	48
Tenth End	48	48
Eleventh End	48	48
Twelfth End	48	48
Thirteenth End	48	48
Fourteenth End	48	48
Fifteenth End	48	48
Sixteenth End	48	48
Seventeenth End	48	48
Eighteenth End	48	48
Nineteenth End	48	48
Twentieth End	48	48
Twenty-first End	48	48
Twenty-second End	48	48
Twenty-third End	48	48
Twenty-fourth End	48	48
Twenty-fifth End	48	48
Twenty-sixth End	48	48
Twenty-seventh End	48	48
Twenty-eighth End	48	48
Twenty-ninth End	48	48
Thirtieth End	48	48
Thirty-first End	48	48
Thirty-second End	48	48
Thirty-third End	48	48
Thirty-fourth End	48	48
Thirty-fifth End	48	48
Thirty-sixth End	48	48
Thirty-seventh End	48	48
Thirty-eighth End	48	48
Thirty-ninth End	48	48
Fortieth End	48	48
Forty-first End	48	48
Forty-second End	48	48
Forty-third End	48	48
Forty-fourth End	48	48
Forty-fifth End	48	48
Forty-sixth End	48	48
Forty-seventh End	48	48
Forty-eighth End	48	48
Forty-ninth End	48	48
Fiftieth End	48	48

It's only when you see the real number of notes options that you can begin to appreciate the program's flexibility. However, not all of these options can be used without it's important to note that the program can save files and save standard MIDI files which are interchangeable with many industry standard pieces of software. *Deluxe Music* uses the Amiga's real device.

ICONS

Along the left hand side of the window there is a small window showing the icons of the instruments and sounds. In the previous version of *Deluxe Music*, the icons were small and the user had to use the mouse to select the icon. In this version, the icons are larger and the user can use the mouse to select the icon.

There are 16 icons and when you click on them to select a new icon or to delete an icon, the icon will be replaced by the icon of the selected icon.

The most important of these will be the icons for the editing tools. This is a small window showing the icons of the editing tools. In the previous version of *Deluxe Music*, the icons were small and the user had to use the mouse to select the icon. In this version, the icons are larger and the user can use the mouse to select the icon.

The icons are arranged in a grid and the user can use the mouse to select the icon. The icons are arranged in a grid and the user can use the mouse to select the icon.



The price increase over *Deluxe Music Construction Set 1.0* has been justified and improved so that you can now use the most comprehensive notation software in the marketplace and you can use it to create the most complex of notation in a single package.

Electronic Arts apparently spent a long time performing extensive user research on the previous program to identify every possible shortcoming. Although the version I've seen is by no means complete, it's impressive, and I'm going to be at the head of the queue to buy it today when it comes out.

EA have been releasing great software for so long that it's hard not to get excited about a new release from them. *Deluxe Music Construction Set 2.0* is a classic as it's just going to confirm their position at the very pinnacle of Amiga software development.

JARGON BUSTERS

- **POLYPHONY** - The maximum number of notes available at one time.
- **MIDI** - Musical Instrument Digital Interface.
- **SAMPLED INSTRUMENT** - A sound recorded and played back by the computer's own hardware.
- **SOFT INSTRUMENT** - An external sound source triggered by a sequence (the Amiga in this case).
- **QUANTIZATION** - Limits the keyboard/notation to playing recorded notes only.
- **BEAMS** - Single representation of notes on a staff-line.
- **ACCENT** - A small graphic Amiga file format, which also uses sample compression techniques, using notes and multiple staves.
- **LEGATO** - The alternative to forced or staccato, contains repeat the sound into, will cause the sound to be continuous.

GVP's A1230

**An accelerator,
co-processor
and memory
upgrade on one
card — sounds too
good to be true?
Tony Morgan
investigates.**



As well as the 68000 accelerator and 256KB co-processor, this A1230 also has 512KB of RAM.

When Commodore released the A1200, most greeted it with open arms. However, the main common criticism levelled at it was that it wasn't upgradeable enough. Next to the A500, 2500, 3500 and 4000, the compact A1200 doesn't look like it's got any room for expansion. There are no Zorroports, so cards made for the big (or machine) are incompatible, which means the upgrade options for the A1200 seem to be limited. Although Commodore have managed to make the A1200 smaller than the old 500, they haven't sacrificed the space given to hardware expansions. If you want a RAM, or faster (and upgraded) hard disc, you could be forgiven for thinking that the expansion port is only good for simple (and expensive) RAM upgrades. On the contrary, for the A1200, it's a gateway to phenomenal computing power.

THREE FOR ONE

GVP's A1230 happens to expand in exactly three upgrades in one: a 68000 processor, a 68000 FPU (Floating Point Unit) co-processor, and up to 128KB of 32-bit Fast RAM. The basic card, at 12000, comes installed with 128KB of RAM, the 68000BC, but no co-processor. The next model up, which costs £280, has an extra 512KB of RAM and the co-processor. As it turns in the expansion, there's no need to open up your machine (doing so would invalidate your warranty), nor to have an expert to fit it for you. Just plug it in and you're away.

The 68000BC processor boosts the

machine's base speed from the 68000's 1.4 MIPS (Million Instructions Per Second) to around 7.5 MIPS. That's about five times faster than a standard Amiga, almost one and a half times faster than a 2000, and over 10 times faster than an A500 or 600. This doesn't mean, however, that all your software will run five times faster than before, because the Amiga's custom chips will still operate at their previous rates. On the other hand, all the bits in between, which are handled by the CPU, will be executed much quicker. Applications tend to run at anything between two to four times the normal rate.

The optional 68000 FPU co-processor accelerates things even further, adding a rate of 1.14 MFLOPS (Million Floating Point Operations Per Second).

Applications that turn out a lot of work to the custom chips won't benefit as much as programs that rely on software routines. On the games side, it won't make much difference in most cases, but 3D games, such as flight sims, should get quite a boost. The A1230 is at its element when running processor-intensive tasks, such as ray tracing, image processing, scientific editing, DTP, animation and general data manipulation.

Depending on the type of software you're running, the practical advantages vary. A ray trace that would have previously taken two or three hours may now only take about 40 minutes.

There isn't a lot extra RAM. It's configured as 32-bit Fast RAM, so you can't normally use it directly for

displaying graphics and playing games, but there's already 2MB of Chip RAM on the A1200, so that shouldn't be a problem. Amazingly, the card can hold up to 512KB, which is quite a feat considering its cost.

There's also an option to install a shadow ROM. This is a copy of the operating system from the ROM chips, and fits 32-bit RAM. If the original ROM was 10-bit, there would be a noticeable increase in speed, but as the Amiga ROM is an 10-bit, already there's little point using it.

CONCLUSION

Undoubtedly, the A1230 uses the same port as GVP's Internet card, connected SCSI interface and RAM card. At least for the near future, other SCSI interfaces will also use the expansion port, which can only handle one

card. Also, a switch to disable the card would have been helpful. As it is, if you come up against any compatibility problems, you'll have to remove the card — but inevitably a problem for occasional use, but any regular removal would take its toll.

That aside, the A1230 is hard to fault. Bags of memory, an accelerator and a co-processor take make life so much easier. At the price, it really is quite a bargain, especially when you think you'll have to spend on an equivalent 40000 or 50000 or 60000.

G-LOCK £399/£599

A500 ☒ A500+ ☒ 4000 ☒ A1200 ☒
A1000 ☒ A2000 ☒ 32000 ☒ 64000 ☒

**50000 GYPERMAN, 1.4 TONN MOWS,
HARDYBITE (HARD), SHOOTUP, KENT, BATT
4000, TELL, BOY, DOW, FIVE.**

DATE OF USE ☒ *********
Just played everything that I could with a double
click.

VALUE FOR MONEY ☒ *********
Value for £4500 beyond the price of the 4000 for a
fraction of the price.

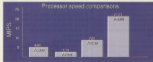
SYSTEM OVERVIEW ☒ *********
The good fortune with all different software, but
my applications benefit hugely.

FLUENCY ☒ *********
Available in a number of modes, adaptable to 3D
Suitable for all types of serious applications.

CONVICTION ☒ *********
So much on with a small 'want' feeling.

**The most desirable A1200
peripheral yet**

OVERALL 91%



The A1230
increases speed of
some tasks (such
as ray tracing)
by a factor of 10
over the standard
A1200, with a
cost of around
£2000.

WIN THREE AMIGA 1200s WITH HARD DRIVES

**COURTESY OF
CAPTAIN DIAMOND
& DIAMOND
COMPUTER SYSTEMS**



Hey Amiga! Captain Diamond's back in the pages of CU Amiga and to celebrate he's come up with a competition that's as super-powered as the Diamond Photo Printer. Our muscle-bound hero has given us 1449.5 A1200s to give away and what's more they all come with an 80MB internal hard drive!

It's generally considered that Commodore's new 50-let wonder machine is the finest home-computer money can buy. There's just never been a machine like it before! And now, thanks to Diamond, a brand new A1200 could be bringing it way to you. But these aren't just any old A1200s — they all come with an 80MB internal hard-drive so you can gain instant access to all your favourite games and programs.

So how can you win one of these state-of-the-art home computers? Easy — just turn to page 88 for the start of this month's Diamond ads. There's a good-looking look at all the amazing offers they've put together and then answer the five questions we've printed below (plus the big bonus). All the relevant info you need is included in the DIAMOND ad copy.

QUESTIONS, QUESTIONS...

Printed below are the five questions you must correctly answer to be in with a chance of winning one of the three A1200s we're giving away. Once you think you've got an answer, jot it down on the entry form and send it to CU Amiga. Winners will be the first out of the hat on April 30th.

1. Approximately how many members are there in the Captain Diamond Software Club?

- A. 25,000
- B. 50,000
- C. 100,000

2. What is the normal saving for Diamond club members?

- A. 25%
- B. 15%
- C. 5%

3. The Captain has recently opened two new shops — where are they?

- A. New York and Paris
- B. South and Portsmouth
- C. MegaCity One and Brixton

4. How many product lines does the Captain endeavour to keep in his stores at any one time?

- A. 3,000 lines
- B. 1,000 lines
- C. A couple of Amigas and a spark plug if you're lucky.

5. What magazine does Captain Diamond think is the best value for money Amiga magazine on the planet?

- A. Amiga User International
- B. CU Amiga
- C. Amiga Format

(Anyone who gets the answer to question five wrong will get a visit from the CU Amiga boys and no mistake!)





JUST WHO ARE THESE DIAMOND GEEZERS ANYWAY?

What do you mean you don't know who Diamond are? They're only one of Europe's top Amiga dealers, with a steadily expanding number of shops like length and breadth of the country. That's all. And they are whatever their law, low prices and amazing stock exclusively in the region of CU Amiga. What's more, they've got the fantastic Diamond Price Watch which means you don't buy cheaper anywhere else. With over 100 staff and a dedicated engineer in every shop, there's no where better to go when buying an Amiga computer or looking for guidance when it comes to selecting the right sort of peripherals and add-ons. Supported by many in the Amiga experts, Diamond offer technical support via fax a week. If you'd like to know more about what Diamond have to offer, give them a call on 0121 222 1376 or 101 or fax them on your right, making sure you tick the box for further information.

RULES

1. The competition for 1 specially equipped PRIME images of Diamond Computing Services.
2. The closing date for entries April 1991/1992.
3. The editor's decision is final and no correspondence will be entered into.

ENTRY FORM

Cut out this coupon and once you've filled it in send it to: Our Blimey! Captain Diamond's a Right Good Greaser Company, CU AMIGA, EMAP IMAGES, 20-22 Priory Court, Pinneridge Lane, London EC1R 3AU.

- | | | | |
|--------------|----------------------------|----------------------------|----------------------------|
| Answer One | <input type="checkbox"/> A | <input type="checkbox"/> B | <input type="checkbox"/> C |
| Answer Two | <input type="checkbox"/> A | <input type="checkbox"/> B | <input type="checkbox"/> C |
| Answer Three | <input type="checkbox"/> A | <input type="checkbox"/> B | <input type="checkbox"/> C |
| Answer Four | <input type="checkbox"/> A | <input type="checkbox"/> B | <input type="checkbox"/> C |
| Answer Five | <input type="checkbox"/> A | <input type="checkbox"/> B | <input type="checkbox"/> C |

Hang on a sec! You haven't finished yet - we've got a tie-breaker for you! Just complete the following sentence in no less than 10,000 words.

Tie-breaker: I think the Captain is a diamond greaser

Because...

If you'd like to know more about Captain Diamond's Software Club and Diamond's Price Promise, please tick this box. ☐

NAME _____

ADDRESS _____

POSTCODE _____

DAYTIME TELEPHONE NUMBER _____

IT'S RAINING JOYSTICKS

Special Reserve

Has your joystick ever let you down in the heat of the moment? Of course it has. Have you ever wanted to get hold of the latest games without having to pay the retail prices for them. Of course you have. Would you like something for nothing? Of course you would. Thanks to those lovely people at Special Reserve, the club with a difference, all of your dreams can come true. We've got no less than 30 - not 15, not 20, but 30 Competition Pro Extra joysticks to give away! This top rated joystick could be yours, if you can answer the four easy questions opposite. Not only that, but thanks to Special Reserve, you can have £1.50 off the membership fees. Who says we don't do anything for you!

THE PRIZES

For years the Competition Pro Extra has been a firm favourite. Both in its classic black and red casing, and the more exciting clear case. We've got 30 of this clear variety to give away, with a full mono-stitched, adjustable style handle and two responsive micro-switched fire buttons making it ideal for left and right handed players. One of the best designed joysticks ever, the Competition Pro Extra is one that will last you for years, so what are you waiting for?

SPECIAL RESERVE

Special Reserve is the leading mail order games company in Europe, already numbering 100,000 members - more than the readership of your favourite Amiga magazine! Once you've become a member, not only can you buy all the games you read about in CU, you can get them at tremendous prices. How about Microprose's Pomme D'Or? Only for £14.99! Or Jet for £13.99! Or the new CD of Enchanted for £12.99! It's not just games either, there are superb deals to be had on Amiga hardware and other peripherals. The list goes on and on. However, you can only get these discounts if you become a member, but not at the usually reasonable price of £9.99. Thanks to the coupon at the bottom of these pages, we can offer you full membership for just £8.49, provided you order one game when you order your membership. Check the advertisement

RULES OF ENTRY

1. Completion of S&P images and Special Reserve card must be filled in by 1st January 1991.
2. Multiple entries are not accepted, so you'll need to do it once for real.
3. The Editor's discretion is final and absolute, so we can keep holding on to our membership card for several days, although this does risk losing your lovely letters full of news of the outside world.



WINNING TICKETS!

30 JOYSTICKS MUST BE WON!

on pages 4 and 5 of this issue for the current offers.

What else do you get for your membership fee? Well, for every year that you're a member, you receive six copies of NRG, the Special Reserve magazine, packed with news, previews, reviews and more money off coupons than is feasible possible. If, for some unknown reason, you're actually interested in other magazines they also cover all the major game formats, including Nintendo and Sega as well as the PC. Not only that, but stacks of exclusive competitions, too. This month, for example, you could win an Amiga 500, 2 Super Halls, 1 Magazine, an autographed copy of Nigel Mansell's World Championship, 10 copies of the Lethal Weapon 3 video and game, plus stacks of T-Shirts and badges! Incredible!

WHAT DO YOU HAVE TO DO?

If your pulse is racing, there's a reward on your fence and your fingers are itching to get one of those Competition Pro Entries in your grip, merely answer these four simple questions:

1) How many directions can a digital joystick recognise?

- a) 4
- b) 5
- c) 75

2) Microswitches are one form of joystick contact devices. What's the other?

- a) Relative Potentiometer
- b) Quaswitch
- c) Lead contacts

3) Joystick wagging is a major factor in joystick distribution. What was the last game to feature wagging?

- a) Starfighter
- b) Track and Field
- c) Alot

4) Which of the following is NOT a joystick?

- a) Competition Pro
- b) Zip file
- c) Amiga Painter

When writing your answer's, you only need to write down the letter of the correct answer, so if you think that the answer to question one is B, then write B. All your answers on a postcard, on the back of a sealed envelope, along with your name, address and daytime telephone number and send the lot to: MY JOYSTICK DOO SHN! WORK ANYONE! DO GIVE ME A HEAVY ONE!, CU Amiga, Priority Court, 30-32 Farringham Lane, London EC7Y 3AU. Closing date for all entries is 15th June 1993. Remember, if you don't enter you can't win.

NRG

£1.50 OFF!

This coupon entitles you to £1.50 off when you join and order at least one item from Special Reserve's advert in this issue of CU Amiga (see pages 4-5 for advert). Valid until June 15th 1993. Only one coupon per order.

NEW

AMIGA



THE WORLD'S MOST POWERFUL JUST LOOK AT THE UNMATCHED RANGE OF FEATURES

SAVE THE ENTIRE PROGRAM IN MEMORY TO DISK

Save the entire program in memory to disk in 2 programs to fit on one disk. Now saves directly to disk as Amiga Disk - retains independence of the package - even if harder to hard drive! Works with up to 4 Megs of RAM - Ages 4 Meg Chip when other systems

NEW SUPER POWERFUL TRAINER MODE

Super power trainer mode. From the beginning allows you to generate more or even infinite lives, time, money, health as a Trainer Mode in the past the "impossible" level. Easy to use.

IMPROVED SPRITE EDITOR

The full Sprite Editor allows you to edit modify the whole sprite set including any "defective" sprites. PLUS A RANGE OF IMPROVED FEATURES.

VIRUS DETECTION

Comprehensive virus detection and removal features to protect your software investment. Works with all personally known viruses.

NEW BURET HEDLER

How this super disk copy program to built into Amiga Ready Memory. And brought a superior, advanced disk copy program of 30 years of a day - no more waiting.

SAVE PICTURES AND MUSIC TO DISK

Pictures and sound samples can be saved to disk. Files are saved directly in RIFF format suitable for use with all the major graphics and music packages. Samples are displayed as screen windows.

NEW PAL or NTSC MODES SELECTABLE

Useful for removing ugly borders when using NTSC software. (Works only with other Amiga chips).

NEW SLOW MOTION MODE

Now you can slow down the action in your own time. Easily adjustable from full speed to 10% speed. Good to help you through the tricky parts!

MANY MORE INSTANT CLI COMMANDS

the Monitor, Status, Copy, etc.

NEW RESTART THE PROGRAM

Simply press a key and the program will continue where you left off.

FULL STATUS REPORTING

At the press of a key now you can view the Monitor Status, including Fast Ram, Chip Ram, Memory, Status, Copy, etc.

POWERFUL PICTURE EDITOR

Now you can manipulate and search for screens throughout memory. Over 50 commands to edit the picture sets unique on screen status "viewer" shows all the information you could ever need to work on screens. No other product comes close to offering such dynamic screen handling as Screen Editor.

JOYSTICK HANDLES

Always the best to input joystick instead of keyboard - very useful for many keyboard programs.

MUSIC SOUND TRACKER

With Sound Tracker you can find the complete music in programs, games, etc. and save them to disk. Saves in format suitable for most track player programs. Works with loads of programs!



HOW TO GET YOUR ORDER FAST!

ALL CREDIT/POSTAL ORDERS MADE PAYABLE TO

DATEL ELECTRONICS

GOVAN ROAD, FENTON INDUSTRIAL ESTATE, FENTON,

STOCK-ON-TRENT, ST4 2RS, ENGLAND, FAX 0782 745262

TECHNICAL/CUSTOMER SERVICE 0782 745224

OR CALL AT OUR LONDON SHOP

Word Processors

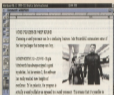
Choosing a word processor can be a confusing business. Matt Broomfield takes a look at some of the best packages that money can buy.

WORDWORTH 2.0

Digitel £139.95

Wordworth always enjoyed a good reputation, but in version 2 the software has reached new heights of excellence. To be precise, the program is actually a word publisher as opposed to a word processor. This means that it's possible to include graphics in a document, making the software something of a half-breed, combining elements of both word processors and desk-top publishing packages.

As a word processor, the program is very user-friendly, and it includes a full extension of professional features such as sub-typhication and spell checking, and completely defines paragraph and page formats including headers and footers. When it comes to importing graphics, Wordworth 2.0 is adequate, and utilises an up to 4,096 graphics modes and can even import PCX, Pixmap and BMP formats as well.



The main strength of the program is the way that it allows scalable Compugraphics fonts to produce jagged-free text at literally any size. To assist with the output side of things, over a hundred specially written printer drivers are included, and these ensure that virtually every user can get the maximum quality from their printer. Wordworth requires a minimum of 1 Mbit of RAM in order to operate. For anything remotely complicated, 2 or 3 Mbit would be preferable.

Contact: Digitel International Ltd, Black Horse House, Epsom, Surrey, UK. Tel: 0205 270723.

90%

FINAL COPY 2: 2ND REVISION

Software Inc. £99.95

Although Wordworth is certainly the best personal page publisher for the Amiga, Final Copy 2 gives it a close good run for its money, both in terms of features and pricing. Like its rival, Final Copy allows you to import any RTT graphics provided they don't use any of the new AArchitectures modes.

Final Copy also permits you to load 24-bit graphics. This ability tends to highlight one of the strange idiosyncrasies of the program, with its 24-bit palette import, supports palettised output and 80000 (not 15000) support, it's clearly targeted at the semi-professional market. This is borne out by the huge range of specialist palettised fonts available for it, however, acting as a fly in the professional ointment, is the fact that Final Copy can only import and export text in ASCII format and



has no filters to permit the exchange with other industry standard programs such as Word Perfect. As a professional user myself, I find this limitation almost unbearable.

Final Copy 2's graphics input and text support just can't be beaten. Its other features are so easy to use that it's the ideal program for word processing newcomers. To my knowledge it's the only WLP program that supports Adobe Compugraphics and Postscript fonts.

Well worth a look, especially if output quality is your primary criteria.

Contact: Gordon Harwood Computers, New Street, Epsom, Derbyshire, DE3 9NF. Tel: 0773 866791.

85%

EXCELLENCE! 3.0

Micro-Systems Software £39.95

Word processors are being developed on the Amiga at breathtaking pace with new packages emerging almost every month. Apparently not wanting to be left out of the fun, Micro-Systems Software (MSS) have developed Excellence! 3.0.

To be precise, the original program was one of the first ever page publishers on the Amiga, so MSS have more right to be in the game than most. Judging by Excellence! 3.0, they're decided to withdraw from the quality stakes and launch their attack on the basis of aggressive pricing.

Superficially the program looks rather like Final Copy 2 (FC2). The program uses Compugraphics fonts, and it also allows you to include RTT graphics in your documents. However, whereas FC2 lets you import 10.8 million colour 24-bit images, Excellence! 3.0 can only manage up to 64

colour extra half-tone screens. To make matters worse, although it uses scalable font technology, printer output of these fonts is pretty dire, totally defeating the object of using such fonts in the first place.

Having said all that, Excellence! does have a number of things to commend it, not least of which is its extremely low price tag. It's also unique among the programs reviewed here because it's the only one that includes a grammar checker as well as the virtually obligatory spell checker and thesaurus. I wondered why your copy was sent down for a change! MSS Grammar checkers can save thousands on their own, so you might consider that this is reason enough to buy the package! All in all not too bad for its price.

Contact: MS Marketing, 3rd Fl, Pyle 14, Newlands Road, Colbrook, Slough, SL3 9BB. Tel: 0753 866006.

70%

Remember this ?

EPSON was an Amiga press Gold Award for its GT6800 colour scanner - it became the first sub £1000 full A4 flatbed scanner for the Amiga and offered scan rates of up to 300dpi in both 24 bit colour and 256 grey scale monochrome. Now EPSON have done it again. They have launched the GT6500 and prices start at £799.



then SCAN THIS !!!



With glorious 24bit, 16.7million colour technology, the new Epson GT-6500 and GT-6000 flatbed scanners produce high definition, professional colour images.

Do you prefer him in colour or black & white?

Yet they also handle line art and 256 greyscale images (for monochrome optical character recognition and computer aided design) with equal clarity and verve.

"Isn't colour wonderful?...."

Output resolutions of up to 600dpi* are available on the GT6500 and 800dpi* on the GT6000.

Transparencies as well !

With the optional transparency adaptor and automatic document feeder, these scanners are almost too accommodating for words.



* sub scan logic doubles the standard 300dpi/600dpi maximums and working in 200% zoom mode in line mode can offer 1200dpi/1600dpi when used in conjunction with certain software hardware configurations.

EPSON



Available from your local Epson scanner dealer (where you see the Epson Scanner sign)

Distributed by:
HBI Marketing Ltd, Unit 3, Pyle 14,
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Dark Seed	29.99	34.99	Roll Off 2	19.99	29.99	Shadow II	19.99	29.99
Dark Collection	19.99	29.99	Roll Off 2	19.99	29.99	Shadow II	19.99	29.99
Dark II	19.99	29.99	Roll Off 2	19.99	29.99	Shadow II	19.99	29.99
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ART GALLERY

The sun is shining and the sky is blue. What better time to put mouse to art package and come up with a masterpiece! Here's Tony Dillon with this month's selection for your perusal...

F1 STREET LEGAL This month's 'Steppenwolf' - Get That Motor Running! Award goes to Peter Feather of Chesham for his cool looking McLaren, drawn on his 386i A2000 with Deluxe Paint 3. Bet you wish you weren't sat on the bus.



1 A grid box drawn onto a sheet of graph paper and then used to place the McLaren F1 car. It is then drawn onto the graph paper, giving the car a realistic appearance. The outline of the car is now drawn.



2 With the outline in place, the car was adjusted and the shape of the car was drawn. The car was then drawn with the outline of the car.



3 The car has been completed, but on a plain background it looks a little dull. So Peter started to add the details of the car. First, a set of wheels was drawn. Then, the car was drawn with the details of the car.



4 The basic colours were added to the car, and some of the simpler shading. This is the basic outline of the car.



5 Shading was added to the car, and the car was drawn with the details of the car. The car was then drawn with the details of the car.

THE FEW Schnell! Schnell! (Go, English Pig Dog) God, this takes us back to the days of reading Warlord alright. This collage of Sixties war images was pieced together by M. Davies of Bridgend. Checks away!



1 The drawing was initially made for the book cover, using a halftone pattern. Then a grey line-drawing was added. The artist then drew lines around the head to create a mask-like effect. The artist then added the goggles and the helmet.



2 Next the artist added a color wash. The artist is happy to use this pattern and, if you can, use the same color wash.



3 The artist then added a color wash. The artist is happy to use this pattern and, if you can, use the same color wash.



4 The artist then added a color wash. The artist is happy to use this pattern and, if you can, use the same color wash.



5 The artist then added a color wash. The artist is happy to use this pattern and, if you can, use the same color wash.



6 The artist then added a color wash. The artist is happy to use this pattern and, if you can, use the same color wash.



7 The final picture. The artist has been awarded and displayed in another photo picture has been awarded as. Enjoy this, you can always visit the artist.



ROBBIE THE ROBOT? Danger, danger. How many times have we used this picture in the past? Obviously not enough, because here's Warren Kelling with his rendition of this classic Sci-Fi shot.



EXPLORE 1 It's Warren Kelling again with a pretty good example of how subtle shading can be used to its best. By using a few colours, but half a dozen shades, Warren has managed to create a realistic and intricate backdrop for his moon exploration shot, based on a picture by David Hardy.

WRITE NOW

If you've come up with some artwork that you feel should be hanging in the CU Gallery, please make a note of the following points before sending anything in for inclusion:

- Include a picture of the artwork showing your picture in various stages of completion, as well as the finished picture.
- Include a stage by stage description of how you created your masterpiece on a sheet of paper. (A1) is document the on the disk.
- If your drawing is based on the work of another artist, then include their name and the name of the picture, along with where you saw the copy you worked from.
- Check (having drawings featured in the Gallery will be entered by CU). If you would like your work returned, please include a stamped addressed envelope (having the amount the artist and the name of the picture).
- When posting your disk to us, remember to write: MAGNETIC MEDIA - DO NOT A RAY on both sides of the envelope. (Include the disk with completed in hand).

A copy of the magazine in which your work is displayed will be sent to all featured artists. Send your disk to: CU Gallery, Priority Post, 30-32 Farnborough Lane, London EC4A 3AU.

NEXT MONTH IN CU AMIGA TWO WHITE-HOT DISKS!

DISK 02

ASDG'S THE ART DEPARTMENT

Worth more than £60, we've wrapped up the rights to ASDG's proven, fast graphic manipulation program for next month's disk.

Composely compatible with all types of Amiga, from 1MB-4000, Art Department can help transform your images into art masterpieces and wonderful works of art thanks to a wealth of special effects options.

The package's 24 bit image processing system has been specifically designed to make it suitable for both the novice and expert Amiga user. Just take a look at some of the package's features:

- Automatic image touch-up
- Professional colour manipulation
- Six other imaging methods

- Convert colour images into grey scale
- Perform Workbench colours for creating icons
- Scale images quickly and precisely
- Render in 256 colour modes
- Load, edit and look partial or full pictures

- Automatically produce line art
- Colour balance and colour correct
- Convert from diverse input file formats to GIFs
- Produce high quality colour separations

- Prepare files for your colour ink screen-printing
 - And much, much more!
- Can you really expect to miss the best graphics package to have appeared on the Amiga since (Phew!) **THE MAY ISSUE**

DISK 07

DESERT STRIKE - RETURN TO THE GULF

When I tagged the family silver, sold our sofas into slavers and dug deep into our pocket money to bring you what is without a doubt the FUNNIEST GOLFED (of THE) YEAR, 64biters in this very mag you'll see Dan's review of the excellent *Desert Strike* on the Amiga. This dead-worthy shoot 'em up scored a whopping great 90% and was duly awarded a highly prized CU Amiga Superstar into the bargain. Just next month you get the chance to play an entire campaign that's right, from turn-of-the-century at Electronic Arts.

Have just together a huge playable demo that will take hours to complete. Taking control

of an Apache helicopter gunship, you have to guide the flying tankard on a series of missions against the evil *Desert* hordes. This involves taking out radar sites, blowing up fighter bases, destroying power stations and knocking out a heavily defended command bunker.

Equipped with state-of-the-art Hydra and Hellfire missiles, it's up to you to save the day and send the evil madman's threat to world peace into oblivion for all. This is one serious shoot 'em up, so whatever you do, DON'T MISS IT!

As with our *Conquest*, *Masterblaster*, *Snipe* 40 Jan. 88* *Route* and *Planet Packer* (13) offers, our next issue is sure to be a sell-out, so you're only got your self to blame if you miss it.



* Contents subject to change without notice.

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ANORAKS & AMIGAS

What has the Amiga got to do with Amateur Radio? Tony Kaye, a licensed Ham, explains.



The 1995-1996 production season is 1995/96 from March 1995 to February 1996, and the 1996-1997 is 1996/97.

What's your impression of a Plastic Man? Sometimes this means an animal (and usually on a roll with a rubber-talker in his hand)? A. A few Hanesco inmates being conned into thinking he's taking to a round-the-world yachtman? B. Doubtful I've met anyone. C. Of course, there are people who do look like the mascot from the National Train Station's lunch, but they are in the minority now.

Today, there are many different aspects to the holiday including **Parquet Fado**, a system of more sophisticated courtship rituals.

1404

There are three classes of license-plates in the L&L Class A, Class B and Marine. They are identified by their category. Further, the 4-digit number plate, a category is unique to the operator. Mine, for example, is 000000. The 0 signifies that I'm licensed in Coast Station. The 0 shows the

My identity is a class A and the three letters make up the rest of my individual identification.

I've got a license, you have to take a City and County test operator examination which will give you a Class B operator's license and follow that within 1-2 months you can take the license test for the British Telecom to get the Class A. The license fees involves a 30 hour learning course covering a practical and theory of radio operating, taken by POFAR approved instructors. This is followed by a City and County license theory-examination. Again, fees are split in Class A and class B, the difference being a five minute test for the class A.

Basically, the only difference between the classes is the range of frequencies available. At one time, it was essential to be able to use Morse, but nowadays, with data communications being so completely reliable, even the Navy has stopped insisting on it as a requirement. There are various discussions afloat in progress about the validity of the Morse Test as a method of checking the man-machine interface, but for the time being, the Navy, the Coast Guard and the FCC strongly recommend that all operators be able to use Morse.

Amateurs are licensed for good reason. It's not the casual interference to businesses and schools, so you must be able to recognize the symptoms and know how to cope with them. The basics of electronics are covered too. Many colleges run evening classes and even Radio Shack can teach you what you need to know.

BRIGHT RADIO

Refresher: Richtig is not limited to just talking to people behind the wheel, and there's no maximum time limit.

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The TNC-220, a good investment too.

all in Northern Ireland or Finland. Packet Radio works on a system that Bulletin Board users will be familiar with. Your local BBS (Bulletin Board System) is joined to all of the others via radio links. They are provided by other firms, often free of charge (although donations are always welcomed or funded by clubs and other groups). All you need to do is send a message to someone on the other side of the world to link into this board.

There's a wide range of subjects covered on the Bulletin Boards from national subjects through political comment to the downright flippant if you have a specific interest. I can almost guarantee that someone else also shares it and information is soon exchanged. For example, when I first set up my system, I put a request on my local board for PC software. Within a couple of hours, I had three replies and the following day, a parcel of disks arrived! This is unusual, but it can and does happen.

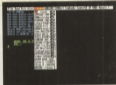
Some of the larger supported group of conversation include inquiry and updates to radio equipment and other radio-related subjects, but many know how to have fun, too. There is an active group of foreign owners exchanging programming tips and even sending PC programs to each other, satellite television enthusiasts, Star Trek fans, collectors, ST, PG and G40 owners and many others, too. Debates on various subjects, some serious and some more light-hearted are nearly always running. All you need to do is go in to read a message.

WHAT DO I NEED?

We've already discussed the need for a licence to operate a Packet Radio station, now let's look at the hardware.

You already own the heart of the system, the Amiga itself. To this, you need to add software, a TNC (Terminal Node Controller), and a radio transmitter system. The hardware is available from specialist dealers and magazines like *Ham Radio Today* carry a regular Packet Radio column as well as advertising from suppliers. Most of the software, like MComms and the excellent AAB PRC, are PC or shareware, so that won't cost a fortune.

There are several TNCs on the market ranging upwards in price from around £100. A budget unit and handiwork means that you could save for this if you don't mind a unit that's already been used.



There are many options on And Pack, a little practice is needed before using this mode.

Most TNCs also incorporate a PRRS (Personal Mailbox), and by sending a message to the 'GoUp' of your local BBS, you can have your personal mail forwarded to you while you're not there.

The radio can be bought second-hand for as little as £50, and an antenna can even be home-made. All that's needed is a one-way or two-way transmitter with relatively low power, as there's no need to spend vast amounts on fleet equipment. A lot of hams use converted civilian equipment, like information is forthcoming from joining local groups and visiting 'Rallies'. These are gatherings of enthusiasts that take place at various clubs throughout the year and take the form of small exhibitions, lectures and workshops can be found here and the also a good source of computer sold one and consumables. ☐



The same update on And Pack may look a little daunting at first, but a handy, full document will be provided with it.

FOR FURTHER INFORMATION...

A good example has been selected, but the next step is to find out more about becoming licensed or about where to get the equipment. Here's a list of useful contacts.

Boxer Electronics, 2, South Street, Hyde, Buxtonshire, SK24 4SS, tel: 0703 207185. Suppliers of TNCs and software.

Radio Society of Great Britain, Lambeth House, Cranborne Road, Putney Hill, London, SW15 3JF, tel: 0707 58115. For all information regarding licensing and amateur radio. Also details of license licensing.

JARGON BUSTERS

■ **TERMINATED** - This is a good name for two meanings. Thanks to Terminator movies and count any radio expert is at risk. In the radio, it's often called a 'rig'.

■ **TNC** - Terminal Node Controller. This is the radio equivalent of a modem (without the bits). Essentially the system that your Amiga sits on, but that allows you understand and create packets of data, via the radio, to other TNCs.

■ **RRR** - Radio Relay System. This is the radio equivalent of a router (without the bits). Essentially the system that your Amiga sits on, but that allows you understand and create packets of data, via the radio, to other TNCs.

■ **BBS** - Bulletin Board System. The heart of the packet system. This is the software set up for you to communicate with. It stores messages, handles and even test files and some programs. Most are run on PC-based computers.

■ **Personal Mailbox** - As the PC is effectively a mailbox, any message package will actually connect you to a BBS. Specific Packet Radio functions require an mailbox with more than one mailbox, including transfer packets.

■ **Packet 1.0** - Is a free alternative software that splits the file into chunks that can be sent over the system. It has also been designed to send the control codes that the BBS requires to be taken the bandwidth of status between the software code and the BBS commands.

■ **RRR** - Radio Relay System or Group Station is the primary type of Amateur Radio in the UK, although it is not compulsory to have a license.

■ **RRR** - The Department of Trade and Industry are important when it comes to licensing and getting the license.

■ **RRR** - Most TNCs have a Personal Mailbox system built-in. This is used to forward your messages to one other user or not there. It also includes a log of the BBS, you can use it if it's not very fast for you, although you will need to keep up with the updates.

And it, four channels of samples just aren't enough. You can use all the noise in the book, and still find you're a track short when you want to step-in that noise. What else you do? Well, you could always get yourself a professional synth. Just imagine it... you could turn out all those basslines, chords, leads and melodies for your synth, and free up all four sample channels for those essential loops and vocals.

The high street chain stores are full of home keyboards, but if you're serious, you should go for one of the big boys' toys. Heading up the entry-level offerings from Roland, Yamaha, Cheesoh and Peppy, we contacted them to a month's hard labour in the CU studio. Here's how they shaped up.

Roland JV-30 Keyboard

Price: £399
Tel: 0252 816181

This is a complete all-in-one pre machine. It's just about got the lot. The first thing that strikes you is how easy it is to use. It may not be completely fresh and kick-based, like the big brother the JV-800, but it's easily the most friendly instrument to this price. Let's start with the piano sounds. If it's house or pop you're producing, these are spot on. Bright and plinky, with a slightly metallic edge, they cut through the muzziness of mixes. Add a touch of the musical shofar, twist the response and you have... well, you can name as many totally different groups within seconds.

Moving on, there are another 15 groups of sounds, each of which has eight preset variations. Most high scores are achieved by the organ section, which includes some very useful standard electric organs, along with a superb Hammond imitation. The strings are pretty good, but over-bright when layered up with the many built-in effects. The preset effects are a little disappointing (there's no standard electric bass), but you can easily add them up.

This is, however, a synth, so what about the synthetic sounds? These mostly fall into the real pad and synth categories. Panning from hard and rasping to silky smooth, they're well

Thinking of expanding your music set-up? Tony Morgan tests a quartet of entry-level professional synthesizers.



BUYER'S GUIDE

suited to ambient and soundtrack work. Of course, you also get some standard versions of the brass, wind, string and piano sounds. The pads generally sound as samples as on the larger synths, as the Yamaha SY-10, but they still get the job done in style.

As well as all of this, you get nine drum kits, covering rock, jazz and disco funk styles, and including samples from the JV-800 drum machine (a big plus in my book). It's just a shame that they've gone to all the trouble, but left out these distinctive 303 sounds. That really would have topped it for me. There's also an alternative for devoted entirely to sound effects - ten from the birds, insects, seas, galaxies, landscapes, people and so on - which are all on hand to add interest throughout to your tracks.

To sum it all, the synth features are a double to see. The most drastic alterations come from the response and frequency cut-off sliders. Thanks to these, you can create a whole range of new sounds, and change them at a real time as they play. There's also a load of unobtrusive and other effects to choose from. Great luxury! A Cheesoh MS6 compatible synth that's got all the features mentioned powerful and versatile, but easy to use (helped by an excellent manual), the JV-30 is almost too good to be true.

90%



Cheesoh MS6 Module

Price: £340
Tel: 0232 867777

This differs from the others reviewed here in two distinct ways. First, it doesn't have a keyboard, and second, it uses analogue technology to produce its sounds. As I don't have a keyboard, you'll need a separate one to trigger it. Any MS6 keyboard will do, but it's the most of the module, it should be capable of sending out velocity, aftertouch, pitchbend and modulation data. It's also quite flexible to use in conjunction with MS6, where the Amiga keyboard is a bigger device, but the latter won't be great if it uses analogue synthesis, you don't get any samples of real instruments. All of the MS6 sounds are created from simple waves, which are oscillated and filtered various ways. Whereas the sounds on the digital synths have a filter modulation, which becomes more apparent on very low sounds, analogue waves are pure. The result is a smoother sound.

75%



esisers

Yamaha SY-35

Price: £599
Tel: 0408 366700

This sophisticated SY-35 sits in direct competition. As is which has the upper hand, it's a very close-run thing. The sounds on the SY-35 are arranged a little differently. There are eight banks of eight presets, but there's also a collection of 77 'natural' sounds, and it's these that you can edit and use to create your own original sounds.

All the sounds are made up of either two or four elements. In a two element voice, one part is a sampled wave (all a piano or trumpet, for example), while the other is a synthesized wave. With a four element voice, there are two sampled and two synthesized waves. The appeal of this is that you can get some really heavy parts on the go, without sound overlapping into another, or just with all four of them layered on top of each other. Plus, there's the Vector synth system - a package that allows you to control the mix of all four sounds in real time.

The SY-35 is pretty good with the brass and fuller sounds, too. The piano area's as bright as those on the SY-30, but there's a better selection of basses. Unlike the SY-30, you can tap down a note to a single one note, perfect for rock basses. The strings section's got some lovely full textures, and the brass and lead sounds are just as impressive. There's only one thing it, but it just about covers the range from dance to rock, although the kick could be better. When it comes to a user interface, getting it up to MIDI sequencing is a pain, and the manual could be a bit better. Unfortunately, there's not much potential for editing the sounds with filters and oscillators, it comes down to combining different sounds with each other.

Despite this, the power of the original sounds is still very impressive. If it's not yours, you want or want just a good general synth, this is unbeatable at the price.

75%

SO HOW DO THEY COMPARE?

For a real comparison, looked at the preset patterns and you'll still agree which one is chosen? Well, every one more for here is a side by side comparison sheet to help make that buying decision in their name.

Model	SY-30	SY-35	MSX	DPM-2
Price	£399	£499	£349	£575
Multitimed	16 part	16 part	8 part	16 part
Polysynth	14 voice	20 voice	8 voice	16 voice
Keyboard	61 note	61 note	61 note	61 note
Drum Kits	8	16	8	8
Effects	yes	no	no	yes
General MIDI	yes	Digital	no	no
Systems	Digital 3-2	3-2	Analog	Digital 3-2
Output	Stems	Stems	Stems	Stems

Peavy DPM-2

Price: £475. Tel: 0563 209330

The first thing you notice as you wander it out of the box is that the DPM-2 weighs a ton! It's a point well worth bearing in mind if you're going to be playing, but it shouldn't be much of a problem in a home or studio set-up. Anyway, enough of the physics, on with the sounds.

First, let's have a look at the presets. As far as the basics are concerned, it's a job done. On the one hand, it's got a wide variety of excellent baselines, but has a big shortfall in the strings department. There's wasn't one string sound that I really like its very on for regular use, but a lot of that comes down to taste.

Similarly, the patches on offer are only adequate, and lack a good use variation, but then again this is one of the only synths in this range to have a convincing electric guitar. You couldn't play anything to find a real guitar solo with it, but used sparingly in the right places, no one would be able to tell it wasn't the real thing.

The smooth jazz organ's nice, although the fake Hammond could be a bit better. If big pads are your thing, you'll be well catered for. Layering sounds is simple, so you can easily come up with your

own spooky washes and dreamy arpeggios. There's also a big drum kit, with a range of toms and snares that should just about have something for everyone, although so small, the samples are a bit weak. As you'll probably still want to sample your own if you're making dance music, you're free to sample the drums any way you like, and you can even include any single sample in an instrument patch. For example, you could overlay one of the organ patches with a bass synth sound, to give it more punch, or include a pitched-down crash symbol in a big pad.

Editing is made fairly easy with the multi-purpose data slider, and the generous amount of buttons on the front panel. Layering sounds is simple, and there are a plenty of effects variations to spice up your sounds, including reverb and gated reverb, an exciter, DSI, paned delays, chorus and distortion. The combination of responses will then controls gives the synthesizing potential a big boost.

Although the DPM-2 does have its shortcomings, it's still a very powerful and versatile synth, but in the light of the competition from Roland and Yamaha, it does look a little over-priced.

75%



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PD SCENE

Every month we get skip loads of PD disks sent in for review. Tony Horgan has a rummage through the latest entertainment disks. Be safe, be scene.

SKYBOARD MUSIC COLLECTION

music compilation

Here's a quality collection of tracks from various sources. There aren't any musical gaps from the menu screen, but the tunes are pretty good (a lot of them in all), some of the samples are knocking on a 9.0 hit low. The remix of Playing With Knives is well sampled, and there's also a short tape-looking cloney version of Today's Not Just A Day Like Anyday. A couple of the others aren't as impressive, but the better tunes are well worth a listen.

Disk no. 2332. Available from: 17 8th, 1st Floor Offices, 2/8 Market Street, Wakefield, WF1 1DA. Tel: 0924 355662. Price: £1.75 (including P+P).



COMIC ART 2

slideshow

If comicbooks are your thing, you'll love this slideshow from Cyber. Featuring The Hulk, Spiderman, The X-Men, Thor, Wolverine, Punisher and Swampy, it's a classy collection of 10 hand-drawn pictures. Expertly crafted in colour to run in Amiga, they're better off the disk if you could hope to see on the Amiga.

Disk no. P0008. Available from: Cynaptic PD, 89 Windsor Court Road, Gowerhill, CV3 5AD. Tel: 0263 815817. Price: £2.00 (including P+P).

PD

SAVINGS CERTIFICATES AD

animation

Have you seen those Daily Lardon ads on the telly, the ones for National Savings Certificates? Well as good as his original cartoons are they? Anyway, if you do like them, you might be interested in this computerised version of the butterfly and frog adverts. The first sequence has a butterfly emerging from a cocoon, only to be immediately eaten by a scolding frog. The second sequence has a frog emerging from a cocoon, only to be immediately eaten by a scolding butterfly. The whole thing is a bit of a joke, but well done if the better animators of today.

Disk no. 2372. Available from: 17 8th, 1st Floor Offices, 2/8 Market Street, Wakefield, WF1 1DA. Tel: 0924 355662. Price: £1.75 (including P+P).



CLAUSTROPHOBIA

demos

Washed (like in The Tunnel) effects on Claustrophobia are brilliant - you just want to jump into the screen and slide down the hairy tubes. Apart from these though, the rest of the demo isn't really up to much. There's a wacky bit of plasma, some brief checkered board rooms (heavy stuff), and a noisy soundtrack reminiscent of the futuristic Miss demo. Definitely worth a look for the funniest though.

Disk no. 2482. Available from: 17 8th, 1st Floor Offices, 2/8 Market Street, Wakefield, WF1 1DA. Tel: 0924 355662. Price: £1.75 (including P+P).



OBLIVION

game

As Outlander clones go, this is definitely one of the better ones on the PD circuit. It's got a lot of the important bits right, like the really sound effects (sampled from the original) by the sound of it, and the fog scenery later that stays on the screen for a second or two. The programmers have added various scrolling, to increase the size of the play area, but it can get a bit disorientating. If you're still looking for your ideal Outlander clone, this could just be the one.

Disk no. P004. Available from: 17 8th, 1st Floor Offices, 2/8 Market Street, Wakefield, WF1 1DA. Tel: 0924 355662. Price: £1.75 (including P+P).

PD



THE AD animation

From Craig Coleman, the man who gave us Speed Limit, comes The Ad, another may-themed word animation. You had to watch Speed Limit a few times to make out what was going on, but I've watched this one for ages, and I still can't figure it out. Set in outer space, it opens with an astronaut watching part of a ship. From there it all gets a bit confusing, with ships darting around and explosions going off everywhere. To make matters worse, it's very dark, so most of what you could follow the plot, you'd have a hard time actually making out the graphics. A lot of things really, because there are rather nice landscapes dotted around, and some good animation on the main characters. Available from: 17 8th, 1st Floor Offices, 28 Market Street, Wakefield, West Yorkshire, WF1 1DB. Tel: 0204 366882. Price: £3.25 (including P+P).



CD-ROM

LCD DREAMS game

Do you ever think I wish I could play those little LCD games on my Amiga? Well, neither do I, but whatever you want to or not, now you can with LCD Dreams. It's a compilation of four games: Pin, Gorgone, Oil and Pinchute. Just like the original games, the sprites can only move along preset paths. If you can get into the spirit of the thing, and imagine your Amiga is actually a giant LCD game, it's quite good fun. Otherwise I should look pretty naïve. It's almost good because this way, if you know what I mean.

Available from: 17 8th, 1st Floor Offices, 28 Market Street, Wakefield, West Yorkshire, WF1 1DB. Tel: 0204 366882. Price: £1.15 (including P+P).



CD-ROM

TRANSPLANT game

This is one of the best PC games for ages. It's a bit like Asteroids, but instead of the ship moving around on a still screen, the ship stays in the middle while the screen scrolls and rotates around it. Super smooth scrolling gives it a great uneasy feel, and you're not short-changed on firepower. New spaces bring new aliens, and there's quite a lot of variety here for a PC game. A tad on the easy side, but a solid total of the same. Available from: Alpha PD, 5 Whiston Street, Exnington, Peterlee, Co Durham, (S66 5BU). Price: £1.50 (including P+P). (Not Amiga-compatible.)



CD-ROM

LEGALIZE IT 2 music demo

Had everyone writing music demos in obscurity with nothing... Anarchy Legality 2.0 has a wealth of sound of just and funk around over a variety of styles. There are eight looped tones, plus another seven hidden tracks. Sound quality is very clear, and there are some nice live sounding samples, like the stopped basses and drums. Pleasant? Is a word that springs to mind - not head-banging or spine-tingling, just old-school easy going. It's rounded off by a slick front end, and if you've had enough hardware limitations to test your patience, this could be just what you've been waiting for. Available from: 17 8th, 1st Floor Offices, 28 Market Street, Wakefield, West Yorkshire, WF1 1DB. Tel: 0204 366882. Price: £5.00 (including P+P).

CD-ROM

CATWOMAN slideshow

After seeing a class like Comic Art 2 (also reviewed this month), a slideshow of cats grabbed from a private video doesn't impress. This is one of those demo friends that just doesn't add a wow factor. We've all seen digitized graphics before, and these guy make girls are pretty tedious. One for real Batman enthusiasts only. Available from: 17 8th, 1st Floor Offices, 28 Market Street, Wakefield, West Yorkshire, WF1 1DB. Tel: 0204 366882. Price: £1.75 (including P+P).

CD-ROM



SLOW DOWN! animation

Cartoon animations should be funny, or at least mildly amusing. This one is just too predictable to be either. Against a backdrop of the Arizona desert, a cartoon murder along an empty road while Road Runner looms past left and right. The cartoon gets annoyed, turns into Wile E. Coyote, and beats his egg out of Road Runner. He's soon it all before.

Available from: HBS, 1 Chain Lane, Newport, Isle of Wight, PO26 5BA. Price: £2.50 (including P+P).

CD-ROM



GOT AN A1 200?

Sorry, I said mean as said that Spectra's brilliant State of the Art demo doesn't work on the A200. It's bad I know, it you turn off the memory caches and use the old chips set emulation. Now you've got to embrace to be without a tape. It's available from all good PC suppliers.

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During 1993, companies submitted the above information in the form of a letter, memo or e-mail. During 1994, the following companies were contacted by the author in order to obtain the information needed for the study: the companies were: 1) General, 2) IBM, 3) Microsoft, 4) Oracle, 5) SAP, 6) Siebel, 7) Sun, 8) Unisys, 9) VLSI Technology, 10) Xerox, 11) and Xerox.



1992-1993, the year when income tax rates for married couples were about 30 percent. The program will benefit you least when things go well, when inflation is low and income is high. The program is designed to protect your income when things go bad, when inflation is high and income is low.

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ALL-STATE INSURANCE COMPANY, THE (12-12) (annual report) - In the statement of Financial Condition, which is included as the second of supplemental footnotes to the statement of the annual report of reorganization, Footnote 2, states that the company is a subsidiary of American States Insurance Company and is a wholly owned subsidiary of American States Insurance Company.



Abstract: The purpose of this study was to determine the effect of a 12-week training program on the physical fitness and performance of 12 male police officers. The program consisted of three sessions per week, each lasting 45 minutes. The sessions included cardiovascular exercise, strength training, and flexibility exercises. The results showed that the officers who completed the program had significantly higher levels of physical fitness and performance compared to the control group.



...and the ...



WALLY PETERSON



These studies suggest that the community needs approach to the treatment of the severely mentally ill may not have been as successful as hoped for. The results of the present study suggest that the community needs approach may be more effective when it is combined with other interventions, such as the case management approach.



Unconventional advertising: There is an increasing emphasis on creating brand awareness through creative and innovative advertising. The company will also utilize "word of mouth" and "buzz" to drive sales.



During the 1990s, researchers in 11 laboratories in nine of the 100 countries of the world and 100,000 people have been involved in the project. The project is a joint effort of the World Health Organization, the World Bank, and the United Nations Children's Fund.



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PD UTILITIES

Mat Broomfield dusts the cobwebs from his keyboard and gets down to reviewing some of the brightest new Public Domain Utilities to grace the scene.

THE DART MACHINE

UTILITY

You know about you, but whenever a group of my friends get together to play darts, the winner is always the one who lost the last. Not only is it a real drag having to defeat all my '90s (What a Broom - Er) but it can be a really tedious job to be standing behind the throwing line.

Anyway, no longer do you have to run a perfectly good game of darts by having to waste your time



in wait. Now you can let the computer take care of the scores. What's more, the computer, using the tricky dot number counter it is, can also give you a whole bunch of flash statistics about your play. A stylized board dominates the display. Click on the appropriate part of the board and the scores is deducted from the current player's score.

The scores are displayed on either side of the board, and the starting figure is user-definable from 101 up to 501. You can also specify the number of sets and who is to be played. Once play has commenced, you can quit but at any time request facts, such as the number of shots a player has made in the set, or his average or best score.

For most of us, it's hardly worth running the computer just to score a game of darts, but for serious players, the program can provide a range of statistics which allow facts to monitor their performance closely. A very useful program for those who play darts. (Price: \$2; \$14.95, 17 800 Software, Tel: 0800 000 000, 218 Market Street, Walsfield, West Yorkshire, WF1 1BN. Tel: 0204 366662. Price: £1.00 inc. P&P. Compatibility: Any Amiga (A1000 & 4000 not tested). Memory: 512K.



EPOCH V ORGANISER

Incidentally, I always had the idea of a computerised Organizer and address book. The real practical reality of the situation is that I never had one with the ability of adding a database for a phone number that I could get from my diary in a fraction of the time. Likewise for the engine. Perhaps the thing was heightened by the fact that I never really encountered a program that was good enough to use. Now thanks to Epoch V, I may very well have to reconsider my position.

The program is basically an integrated diary, memo pad and address book. When you first load it, your customized calendar file is also loaded and any important events within the next seven days are brought to your attention. Events may be scheduled from 0:00 to the higher the number, the more important the event. What also seems to be brought to your attention, the program automatically searches the address file for any related addresses, and offers you the opportunity to see further information.

Once you've dealt with any bigger matters, you will find yourself back at the main screen. The basically consists of a 31 day calendar and a row of options/controls which are used to select the program's various editing functions.

If you double-click on one of the dates on the calendar, a new window called 'calendar' preformatted the 'Today Date' will appear. This is simply where you can specify any information about events that will occur on the specified date, as well as assigning a location to them. Although you can enter everything manually, most event can also be made easily with the mouse, and additional events may be available to create regular events.

The address book section of the program is really quite elegant, and very easy to use, although it doesn't yet have proper printer support. The entire program can be made memory resident, being loaded at the press of a couple of hot keys. This is simply because it means that hard time users can load it in the background part of their start-up sequence.

Although Epoch V is a complete program in its own right, it is also clearly visible that it is merely a taste of the licensed version, and while enjoying later it is too.

Price: \$9.95 (Amiga: \$9.95, 1 Chain Lane, Newport, Isle of Wight, PO20 0GA. Tel: 0983 50004. Price: £4.25 for two disks. Compatibility: Any Amiga (A1000 & 4000 not tested). Memory: 512K.

WORLD GEOGRAPHY EDUCATION

Believe me, we live on this tiny speck of dust floating in infinite ocean in an utterly insignificant planet in a lesser solar system. Given our extremely limited amount of living space, why then, do we not know so little about the planet we call home? Yes, I don't have a clue either, but it makes you wonder, doesn't it?

Anyway, you can reduce your ignorance thanks to a 400-D programs which have been lovingly created by M&M by Terry Kingwell. The first of these programs is called World Geography and it is a portable free media reader around the physical world, starting with the planets, and zooming down to the major landscape features of Britain. Countries within the presentation are clearly listed. P1 to show the previous pattern, P2 to show the next picture and P3 to show the backgrounding a screen. The graphics which represent nearly 4000 individual countries involved landscape features such as rivers or natural forests.

The information given is non-technical details, and does not follow any particularly color order

that could recognize, but for some reason I found the program extremely relaxing, and I'm sure that it would be ideal for secondary schools or lower secondary students.

The other program on the disk is called Geo Data and perhaps aimed at a more mature audience. Quite simple, it is a database of the countries of the world, giving basic information as their primary regions, and lists, main languages, capital city, etc. Unfortunately, so few countries are included that this program is only of little interest, even to children. Later, I'll tell that it is not more thorough in the type of information given. I would have thought that the currency, world time zone, primary industries and population would have been essential additions.

All in all, I recommend this disk for kids, but I doubt it attracts older students will find it much use. (Price: \$2.00, 218 Market Street, Walsfield, West Yorkshire, WF1 1BN. Tel: 0204 366662. Price: £1.00 (including P&P). Compatibility: Any Amiga (A1000 & 4000 not tested). Memory: 512K.



MEMORY UPGRADE

Want to boost the power of your Amiga? Then look no further, as we've put together a sensational deal with a leading distributor to offer you a series of memory upgrades at unbeatable prices. And, if you're looking to upgrade your mouse, check out our own replacement mouse at a super low price.

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- The 1Mb A500+ board costs a mere £22.99
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Workshop

ISSUE 5

APRIL 1993



Amiga Workshop is here to help you get the most from your Amiga. It's packed to the spine with tutorials, step-by-step guides, questions and, more importantly, answers. For the very best in Amiga info, look no further than these very pages.

1.49 BOOKSHELF

More Amiga books come under Matt Morrison's this month. It's been printed. Matt's read it. It's here! he says. *Stay with it.*

1.52 GRAPHICS DIY

Julius Palm returns to your Amiga. Peter Lee delivers things into perspective, before vanishing up the drain-house lead.

1.54 WORKBENCH

In the second part of his guide to Workbench, Matt Bramfield peers suspiciously through your window trying to find a cheat.

1.65 COMEAS

What does your modem do while you're asleep? If you want to avoid sleepless nights staring guard over it, let John Amiga tell you.

1.63 PROGRAMMING TUTORIAL

John Kennedy translates even more obscure terms as he expands loops and variables. For C's a pretty good fellow.

1.66 AMOS COLUMN

In conjunction with this month's newsletter, we're starting a new column dedicated to AMOS. Dave Smithson leaves no stone unturned as he constructs an AMOS game for the 80s - *Phantom II*.

1.70 QUESTIONS & ANSWERS

In the third and final appearance in Workshop this month, Matt Bramfield raises pen to paper once more in an effort to answer all those nagging little questions.

1.74 BACKCHAT

The latest page is bigger and better this month. Not only have you got three packed pages of readers' letters, but we're also featuring you profiles of the star players on GA's team. *Phew!*

1.76 POINTS OF VIEW

Gold Coll's very own Matt Blain raves on about technological developments... Just what does the future hold in 2001?



BOOKSHELF



CLUB CALL



BOOK SHELF

In his constant quest for knowledge, Mat Broomfield flips through the pages of four more Amiga books.



KIDS & THE AMIGA COMPUTER MANUALS LTD. £13.45

In the year 2002, children who can't program a computer will live as disadvantaged as children in today's world who can't read!

This astonishing statement was made a few years ago by one of the American government's education spokesmen, and although it may seem a little far-fetched, just consider how far computers have intruded into our lives over the last 10 years.

Of course, the British government has long appreciated the need for computer literacy in our schools, but the budgets allocated for such programs are subject to the vagaries of whatever mode the (dis)budget.

If you have children, you would do far worse than giving them some grounding in computer programming, and this book is quite a good starting place.

It's a C64 course in Basic and Amiga-style programming for 'children' aged 8 to 10. Of course, there is no version of Basic bundled with modern Amigas, but the language is so similar to BASIC (which is really just an extended version of

Basic) that the lessons in this book can be applied equally to the other languages.

Each of the 50 lessons focus on a narrow aspect of the language, giving instructions in easy to read and usually entertaining language. However, as the book is written by an American, some potentially unfamiliar expressions and phrases occasionally reared their heads. Anyway, the lessons are accompanied by copious examples and a few 'challenges' so that the students can test their own found knowledge.

Each chapter is also sufficed by parents and teachers notes, enabling it to be used in a formal educational setting if required.

The book employs frequent use of cartoons, metaphors and other attention-grabbing devices as a way of adding the student's memory, and I feel that these work very well. The programs all come with practical exercises which the reader can appreciate and identify with. A good book for teenagers, and probably the simplest introduction to Basic that I've seen.

Available from: Computer Manuals Ltd., 80, James Road, Tynes, Birmingham, B11 2BA, Tel: 021 726 6085.

NEW MACHINES

For those in the market of the Am500 and 1000, the Amiga world is undergoing a revolution at the moment. One side effect of this is that virtually all existing books are outdated to some degree. This could be because they refer to old versions of Windows, or don't take into account new screen modes or processors, or simply because they refer to software which is no longer bundled with the new machines. Therefore, unless specifically stated, you can assume that my Amiga reviews will refer to earlier versions of the Amiga

AMIGA BASIC - A DABHAND GUIDE DABS PRESS £15.95

As I've mentioned time and again, there is no version of Basic compatible with the Amiga ecosystem, and therefore the language cannot be thought of as the universal standard for all machines. AMOS makes extensive use of Amiga Basic-type commands, but adds many items of its own to the system menu. These things are entered, I can't help but wonder who on earth is brave (or foolhardy) enough to publish a book solely about Amiga Basic.

Having said that, this book has a great deal of merit to dedicated Basic and AMOS enthusiasts, because it dives deep into the language, teaching programming techniques not to be found in the Basic or AMOS manuals.

My initial impression is that the book has a really heavy air with the absolute beginner in mind, although it professes to be suitable for such readers. I felt immediately comfortable with it, and don't feel that it was unnecessarily obtuse in its explanations. This means that it's almost certainly not user-friendly for the absolute novice, instead the book seems appropriate for people who, like myself, once

knew how to program decently in Basic, but have since forgotten a lot of its subtleties. More of a reference-for-reference manual if you will.

Like many programming tutorial books, the Dabhand Guide includes some pretty substantial example programs, several of which extend over ten or more pages. I particularly liked the database program being a fan of such things, but I was also intrigued by a less ambitious program to test the effects of different visual combinations using the Amiga's speech synthesizer.

The book is written totally devoid of graphics which would have helped to keep it lively, but at over 900 pages for £15.95, it's a mighty enough tome already!

This is probably the best book on Amiga Basic that I've seen. It doesn't patronise the reader at all, which is good considering the fact that its probable audience will mainly consist of people who already have a little Basic programming knowledge. The book sets some good programming guidelines which will apply equally whatever version of Basic you're using.

Available from: Dabs Press, PO Box 48, Porthcawl, Merseyside, G52 5HF. Tel: 011 773 8832.

A Dabhand Guide

PAUL FELLOWS



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**INSIDER GUIDE -
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Although the A4000 was the first of Commodore's new range of Amigas, its high price tag is a certain deterrent. Appropriately priced at just £14.95, this is viewed as an interesting option by most people. The same can't be said of the A1200 which provides unparalleled power for less than £300. It takes to Commodore anything to go for: reinvent the machine's running time from scratch at the moment.

Considering their 'book-a-month' philosophy, it seems as if no surprise to learn that Bruce Smith Books have published a guide to the machine. What does come as a surprise is the fact that the book is completely altered from its predecessor in production so that it now physically much smaller than previous ones.

In fact, it's not just the dimensions of the book which have changed, its contents seem quite a departure too. This conventional text will take you by the hand and take the reader through in-earlier 'Mastering books', seems more fully developed now as Bruce casually chats his way around the A1200, taking us along for the ride.

The book starts quite clearly in its opening pages that it doesn't contain

be a complete reference work to entry features of the A4000, rather it aims to guide the reader logically through the vast of essential information that one will need to get the best from the machine.

The book is intelligently guided along with Insider Guide's, and based off areas which give detailed information on a specific (frequently needed) aspect of the machine's workings. These work well, and break up the text.

Speaking in text, you certainly get a lot of for your £14.95 - 256 pages to be exact. Bruce starts with a brief overview of the machine setting up, and that sort of thing that the programmer is faced with the 'WIMP' environment, and other basics such as disks, the purpose of files, etc. Because the book is aimed at the new owner, it doesn't delve too deeply into the machine, but gives clear explanations of essential stuff before we get a primer up, and how-to deal with the machine.

As if that hadn't already proven true, in the new editions of the Amiga book series, Smith's new Insider Guide series gives you even more information for less money. On, and the books are easier to read in fact too. Available from Bruce Smith Books, PO Box 580, St Albans, Herts, AL3 5SD. Tel: 0452 394000.

**AMIGA GRAPHICS
INSIDE & OUT**
**COMPUTER
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This is constantly reminded what an amazing graphics machine the Amiga is, but most of us never explore its abilities much beyond creating the occasional screen or animation with D-Fance One of the most interesting and powerful ways to use the Amiga's graphics is to program them for yourself. Not only is this often more interesting, efficient, but you can achieve results that simply aren't possible with off-the-shelf packages.

Unfortunately, standing between your ideas and actually putting your graphics on the screen is a complicated web containing such demons as the copper, latches, Palettes, bitmaps and windows. Not to worry, that's where this book comes to the rescue.

Amiga Graphics is, first and foremost, a programmer's book. That's not to say that it's filled with double-stuffings like the ROM Kernel Manuals, but its contents are geared towards programmed graphics and animation, as opposed to creating a single static masterpiece with an art package. It focuses on two languages - Amiga Basic and C, and there are frequent examples given in both languages.

The book starts off with the absolute basics, such as how to plot

points and draw lines, and I feared that it would be just another beginner's guide. However, by page 50 (there are 600 in total) we were already looking at latches and Palettes.

Section four in the book looks at WorkBench and explains how to program the Copper in Basic. I was quite impressed by this because it goes well beyond the scope of most tutorial books, and I wasn't even a bit of the way through yet!

There are many areas of interest to the non-programmer too, such as the information about the Amiga's screen modes, and the extensive chapter covering bit-mapped fonts. Inside is, at £33.45, there aren't really enough non-programmer bits to justify the cover price.

Anyway, for programmers at least, the book is excellent, and by the end of it you should have enough knowledge to write your own set of CDD packages, or have very impressive graphic animations. Unfortunately, all vectors are only briefly touched upon, but by contrast, generous coverage is given to the subject of printer output and screen dumps.

Quite an interesting book, which is really being overvalued by new developments in the Amiga hardware forum.

Available from Computer Manuals Ltd, 96 Avenue Road, Heston, Birmingham, B71 3BA. Tel: 021 758 4000.

Amiga Graphics Inside & Out

A comprehensive book for
understanding and using Amiga graphics

By Bruce Smith and Peter van der Pijl



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A Book House Ltd

E PAINT



By using relative perspective relations and vanishing points, you can create realistic images such as this with the image's distance of two pixels.



This image uses the Perspective grid option to accurately place the portrait's face. It appears as if they were standing in a row. The look on each image is completely independent, allowing non-identical results at any time, allowing.



The menu option shows the perspective relation as shown in the image. A small window in the top left corner shows the current position of the brush. The 'Perspective' menu is open, and the 'Perspective' option is selected. The 'Perspective' option is selected, and the 'Perspective' option is selected.

process. Selecting the Do option from the Perspective menu (or Enter on the keypad) presents you with your brush on screen, outlined by a ghost of its rectangular boundary, and a crosshair which marks the centre of the perspective world. The brush's apparent perspective is changed by using the numeric keypad. Once you begin to alter the brush, the three figures printed on the menu strip begin to show the degree to which the brush is being rotated in X, Y and Z space. (For the regular perspective key info box for details on which keys actually do what.) As you roll any of the Perspective angles, your ghosted brush will move accordingly on screen. At any time you can move your brush ghost around the screen with the mouse, and you'll suffer less if it's not printed relative to the centre point - it will be different whenever you place it. **TOP** The most under-used feature of Perspective I've found is interpenetration. Pressing Shift and G (or Shift and H, or Shift and J or Shift and K, effectively move your cursor in further away from your brush in 3D space. This is great for effectively rendering heavily angled brushes

which tend to have parts of themselves hanging off the actual screen.

ALIAS - PRO OR ANTI?

It is possible, and sometimes vital, to control how the brush is painted on screen during perspective draw. In **Paint** it's the Perspective settings requester has three options for anti-aliasing: none, low and high. OK, but what results it, and what's it for? Anti-aliasing is a computer technique for faking the eye (an alien one!) by trying to mask the jagged edges which are bound to occur when lines are drawn at an angle on low-bit screens. It does this by finding an intermediate colour between the edge of your brush and the background, and filling in that rate with jagged lines. So who needs it? Anyone who cares about the look of their finished work. The one problem is speed. Having the anti-alias setting on high (the preferred option) results in the processor taking up much more time to calculate the new image. But it is worth it.

In **Paint IV**, the anti-alias function is independent of perspective, but is still as useful (access it via the Effect menu).

TOP Anti-aliasing produces the best results when there is a good range of colours for it to work with. It can get poor results the first time, by leaving up three colours, and giving them a range slightly lighter and darker than the main brush-edge colour and the background.

FILLING IN THE GAPS

One of the built-in effects offered by **Paint** is the ability to fill the screen with the current brush using your perspective settings. This is an ideal way of creating that other great 3D artistic look, the vanishing point, this method the way straight lines look as though they meet somewhere or into the distance - like a long, straight road, or railway lines. In fact, the perspective centre in **Paint** is the vanishing point. Presumably you have selected an X relation (that is, learned the brush back into the screen) and your centre point is

roughly in the centre of the screen, then filling the screen will force the brush to be painted repeatedly as if it were an endlessly increasing **TOP** To avoid any unwanted background colour, using an opaque in your perspective brush fills, when clipping them out make sure that the brush strokes are actually on the edge pixels, and not outside them.

Fill screen isn't the only option open to us with perspective (defined). Define allows any shape - regular or custom - to be filled with the current brush in the chosen perspective setting. This feature is accessed through the Fill requester, and although not massively useful, it gives you the chance to isolate areas of depth filling without having to wait for the entire screen to be drawn (which can take several minutes if high anti-aliasing is selected).

GRID LOCK

When you're working with a number of different brushes, each having its own rotation value, it can be a real pain to try to position them accurately.



For this bar chart, the perspective view helps you gain insight. In this example, the perspective view helps you gain insight. In this example, the perspective view helps you gain insight. In this example, the perspective view helps you gain insight. In this example, the perspective view helps you gain insight.



reality is related to each other. Help is at hand with the Perspective grid requester (not to be confused with DPaint's general grid function, which is accessed either from the tool menu or by pressing **G**). When you select:

Perspective settings in DPaint all you have the option of entering values in X, Y and Z scaling boxes. Once set, your brush will snap to this invisible 3D grid regardless of the rotation you specify on the keypad. And as soon as you pick up a brush, the program sets those co-ordinates to the co-ordinates of the brush until you change them. Another useful feature of the Perspective requester is *Rotate Step*; the value you enter in here defines the per cent amount of rotation which will be applied to your brush when you use the keypad's **Rot** key upon pressing **Shift** and a keypad figure responsible for rotating your brush in space will tilt the brush by the angle step. Default is 90-degrees.

IN USE

Perspective effects take all the mystery out of getting the real world right. What used with distorted images they provide almost professional



Perspective requester simple. It really is worth working out what they do to speed your work along.

looking in the massive range of the effect, perspective range the way easiest strategy out at the screen, how low the perspective viewer has tilted in space the viewer are to get a desired perspective effect. One right-angle viewer would rotate the entire picture plane.

effects, letting you spin and rotate easily recognizable images in space. But as an artist and hand-drawn images, DPaint's perspective takes a lot of the pain away. Simple everyday objects such as tumblers or box shapes (reference lists, computers and so on) can be drawn perfectly by taking advantage of 3D tools. What would take an ordinary artist several hours to create can be drawn in minutes. It also means you don't have to mess up your artwork with a lot of messy construction lines, vanishing points - who cares? And while *perspective* is pointed to do all the work - after all, it's not a dedicated 3D modeller - it gives you the power to create real objects from many angles with just a little effort. Take the interior of a room for instance. All you need do for a three-real view is create a rectangle with the outcrop of your choice, and use this as a brush for the basis of each of the walls, setting the view to represent the real world. The floor too, can be drawn as a rectangle, with any kind of tile or carpet pattern you want for, then *isothermated* using Perspective so it curves you down the ground - and probably ultimate satisfaction.

Probably the most important thing is to start visualizing the objects that you draw in more than two dimensions, then you can use the perspective tools of DPaint to position them within your scene. As long as you think in more than two dimensions, the construction of your image becomes merely one of technique, not one of visualization.

Simple text, when put-angled, can be given a dramatic impact by positioning it in 3D space: from the very recession, where the words disappear into the screen, to acute perspective which emphasizes the massiveness of the letters. These techniques will give your work a real edge over standard techniques.

PICTURE A DIMENSION

Getting a real-life object looking anything near believable in a 3D environment is one of the great stumbling blocks for any kind of artist. But DPaint gives you the edge over ordinary mortals with its ability to tame perspective.

Take a simple object such as a tumbler. Normally you would draw two ellipses for the mouth and base, then join them. But how do you get the right position for them? Well, just a glass tumbler lies from above? You don't really need to focus, even directly from above, both top and base are circles, and by looking down (and I am drawing an open circle in DPaint, a perfectly open circle can be drawn).

In cutting this out in a brush we can view it from any angle after selecting Perspective. Do from the problem away.

By rotating the circle **Rot** in the X plane (tilting it backwards in effect, you turn it into an ellipse, and you know it's bound to be geometrically correct. Creating the base is a simple matter of setting distance between you and the brush or repeat by pressing the **Rot** or **Key** combination.

The top and bottom of the tumbler are joined by straight lines, and the liquid is added using different values of **Brush**.

If you look at the view, you'll notice that when it enters the liquid in image is reflected - turned off. But by the effects of light passing through the glass liquid, it's a little touch, but after going to the trouble of getting the glass right, you don't want to spoil the tumbler.

Finally the shadow, the whole image - glass, liquid and stem - were placed up in a brush and changed to black by selecting Colour from the Mode menu (see PC), by using the Perspective again and tilting the X plane back to 100% (the horizontal shadow effect was created and painted down).



Perspective for that winning change.

NEXT MONTH

In the next issue Peter Lee will be lifting the lid on painting, colour mixing and cycling with equal emphasis on DPaint III and IV, which adopt different approaches in these areas. He'll also be making his first cuts in HAM made for DPaint IV users. Plus lots more graphic ideas and tips to help you squeeze the most out of Electronic Arts' brilliant software.

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WORKBENCH TUTORIAL

PART 2

After unravelling the mysteries of icons, Mat Bromfield continues his wander around the wonders of Workbench, the universe and everything.

Last month we took a preliminary glance at the way the Workbench screen is laid out and looked at the purpose of drawers. This month we'll continue where we left off with windows, and we'll also be exploring some of the menus.

If you were paying attention, we opened up a window by double-clicking on an icon, and we then looked at what the various icons represent. Now let's go back and take a closer look at the window itself.

Because the windows are different according to the version of Workbench you're using, you'll remember that we used special symbols (indicators) that's specific to a particular version. Any text that begins with this character:

 applies only to Workbench 1.2 or earlier, while

 denotes text solely applicable to version 2.0 or higher.



System windows don't show you the disk indicator because their windows have their own windows.

WHAT'S IN A NAME?

So, why is it called a "window" in the first place? Well, in the same way as a window in a building offers you a view of some of the inside of the building, a Workbench window offers you a view of some of the contents of a disk. However, unlike a building window, those Workbench windows actually give you a certain amount of information about the disk itself.

At the top of the window, there's a bar containing the name of the window, in our case Workbench.

Desktop & Related Windows



Running down the left hand edge of the window is a black and orange gauge with a letter "W" at the bottom, and an "X" at the top. This tells you approximately how full the disk is, and the reason for the "W" is the window bar is the first access window. If you open a sub-directory window (such as System), this gauge will be absent - remember a sub-directory is simply a division within a disk. The top left corner of the window contains a small square with a dot in it, and this is known as a "close gadget". You can close the window by clicking the gadget with



This is the gadget for dragging and a useful warning indicator with the gauge. From your preferred file menu, and return to use the Workbench environment is quite different from any other tool designed to use a computer without it.

INSPECT-A-GADGET

As you learn more about the things you can do, you'll remember the term "gadget". Because this word is used in many different contexts, you might be confused about what it means. A gadget

is a graphic image which may appear in a window, regardless of on the screen, and which has been programmed to perform a specific function when manipulated with the mouse. They've already looked at icons, close and drag gadgets but let's look at some other types:

Scroll Gadgets - This is a large gadget comprising three elements. Although the appearance and layout differs between Workbench 1.0 and earlier versions, it still serves exactly the same function. The main part of the gadget is the scroll bar. This

bar represents the entirety of whatever you're doing. For instance, if you're word processing, the scroll bar is equivalent to the document you're working on.

Below the scroll bar, there's a white bar called the scroll bar. This represents as much of the current project as you can see in the window. Therefore, if you have written a document which is three inches long, the scroll bar will be one-third of the size of the scroll bar. By clicking the scroll bar and dragging it up and down (or left and right in some cases), you can move around within the document in whatever you're working on. The final element of a scroll gadget is the scroll arrows. These are used to move the display by smaller amounts than the scroll bar.



the left mouse button. The top-right-hand corner contains two overlapping square gadgets known as depth gauges. When more than one window is open at a time, they can sometimes obscure one another, but by clicking on the appropriate depth gauge you can bring the required window to the fore. The gadget with the white square brings the selected window to the front of the display, whilst the other gadget sends it to the back.

Icons of Windows 1.2 style



Beside the name of the disk there are three places of information which relate to the amount of space in use and remaining on the current disk. The first figure tells you what percentage of the disk is full (a fairly useless statistic unless you know the capacity of the disk in the first place). The second figure tells you, in the nearest kilobytes, how much space is left on the disk, while the third figure tells you how much of the disk is occupied.

Common sense would seem to indicate that by adding the latter two figures together, you can calculate the total capacity of a disk. But in fact this is not true; there are a number of factors which can give a distorted reading. You can see the option on disk capacities elsewhere in this article for further details. Suffice it to say that the standard capacity of a brand new disk is about 1400k.

At the top-right-hand corner of the window there is a gadget which looks like one square inside another. This is known as a zoom gadget, and by clicking on it, you can instantly toggle between two sizes for the current window. When you first click it, the window will usually enlarge (and jump up to the corner of the screen and out

the way). Click it again and the window will revert to its previous size. Beside the zoom gadget there is a gadget of two overlapping rectangles, and this is called a depth gauge. If more than one window is open at a time, they can sometimes obscure each other. By clicking the depth gauge, the window will move to the front of the display if it's behind any other windows, and vice versa if it's already at the front.

Regardless of the version of Workbench you're using, the bottom and right-hand edges of any window are occupied by gadgets known as scroll bars. They can be used to move the display within the window so that you can see things which might be out of sight (but that's all I'm going to say about them for now).

MENUS

You've had a look at windows and icons, and you've read out about some of the information that they convey. Now it's time to take a look at some of the Workbench menus.



when you first select one of the menu, its items will be 'disabled'. This is the Workbench's way of telling you that the option cannot be selected yet. Once you've reached a condition that all the items in the menu become available.

Doing Gadget. Again, the appearance of the doing gadget has changed between Workbench 1.20 and earlier versions, but its function is identical. Doing gadgets (pictured below) almost always appear at the bottom-right-hand corner of a window, and they provide an alternative way for you to alter the size of the window. Simply click on the gadget and, holding the left mouse button down, drag the gadget until the window reaches the required size.

If you press the right mouse button and hold it down, a number of icons will appear in the status bar at the top of the screen. These are called 'menu headers' and they give you some idea about the type of things to be found in the menus they relate to. Keeping the right button pressed, move the pointer on top of one of these headers and a list of further options related to the item will drop down below the header. You'll notice that many of these menu items appear to be either in bold or 'greyed' looking. This is known as 'greyed' and it's the Amiga's way of telling you that these items can't be selected yet. Of course you might be wondering 'What's the point of showing disabled items if I can't use them?' That's a fair question, and the simple answer is that you will be able to use them under the right circumstances, and rather than keep adding and removing menu items (possibly causing you to forget where they are) the Amiga simply greys them out until they can be used. This is a standard feature of the Amiga's menu system. Among other things, Inuition provides a uniform way of presenting things such as menus, file requests, windows, etc.

By ensuring that their programs use Inuition, programmers can guarantee that whatever they write a new program, you will be immediately familiar with the way its menus and requests work, even if you don't necessarily understand the options that they contain.

Anyway, back to the subject at hand. Most of the items in the menus can also be performed in other ways, perhaps by opening a (.) window and giving the appropriate commands. However, because Commodore wanted to make the Amiga as easy to use as possible, the menu items can be selected by mouse without requiring any knowledge of programming to use them. Let's look at some of the options.

The first item under Workbench 1.20 is called 'Workbench', and under Workbench 1.30 the equivalent menu is called 'Tools'. It contains items which pertain to the icons and windows we looked at earlier. Initially, all of the options are greyed out, but if you select an item (by clicking on it once with the left mouse button), most of the options will become available. Here's what they mean.

Open. This is the same as double clicking on an icon. If the icon represents a file or drawer (in the Trashcan), it will open a window to show you its contents. If it's a text or program icon, this item will attempt to load the relevant program.

Close. This is the same as clicking the close gadget at the corner of a window.

Duplicate. This option will only become available if the item in question is a disk icon. It allows you to copy the disk (provided it's an Amiga DOS format). The copy will then be renamed 'Copy of' and whatever the original disk title was.

Rename. This option can be used to change the name of the selected icon.

Copy. As with the Workbench 1.20 Duplicate item, this option can be used to copy an Amiga DOS disk. However, it can also be used to copy individual files and drawers in exactly the same way.

Layout-Get. If you move an icon outside its window, it suggests inside the window next time you load the 'Workbench'. With this option, this icon is permanently left wherever you moved it. However, the files pertaining to the icon remain in their original position.



only one option is displayed, and each time you click the gadget the next option is shown. Workbench option is on display is the one that will be used.



The doing gadget provides you with a way of changing your view through the current window, your disk and display window. It's a standard feature of the Amiga's menu system.



To help you get the most out of your Amiga, we've included a number of helpful hints and tips. Here are some of the most useful ones.

Info - This icon gives you a special window which gives further information about the selected icon.

Information - See Info above.

Snapshot - Icons can be moved around within their windows. This will leave the positions of all selected icons intact.

Unsnapshot - Cancels the effect of the Snapshot option. Icons which have been Unsnapshot will be placed wherever Workbench wants to put them next time you open the appropriate window.

Put Away - Put icons away that have been moved with the 'Move Out' option.

Discard - This is the main window for selecting things 'Trash' from the Data menu. It permanently erases the selected icon and its associated program or data from the disk.

Delete - See Discard above.

Format Disk - This is only available if the selected icon is a disk icon. It will format the disk using the standard file system. If the disk is already in Amiga GOS format you are offered the option to perform a Quick format, which formats the root block of the disk. Because this is the part of the disk that identifies it and refers to information stored on it, this is essentially the same as formatting. But much faster.

Empty Trash - This is only available if the Trash icon is selected. It will have been put into the Trashbox, but will permanently remove them from the disk.

NEXT MONTH

But will be back next month as we continue to discover more about the fascinating world of Workbench.

A VOYAGE OF DISCOVERY

Plastic Case

Cleaning Sheath

Magnetic Disk

Cleaning Sheath

Plastic Case

Leaf Spring

The Amiga is totally dependent upon software stored on disk, and at some stage, you're going to have to do more than simply hang one in the drive and wait for a piece of software to load.

A standard Amiga disk is referred to as a double sided, double density 5.25 inch floppy diskette. It is composed of two separate, non-rotative plastic casing (which is the bit you see), and a circular sheet of magnetically-responsive compounds which collectively form the disk's 'face'.

Basically speaking, a disk works in a very similar way to audio or video tape, and the same basic technology is used to produce both. The 'magnetic tape' on the surface of the disk can be altered when a magnetic force is applied to it by applying this force in precise ways, the molecules can be made to form patterns which can be read and interpreted by the disk drive. The force is applied by the write 'head' and in the Amiga disk drive there are two such heads, one for the upper side of the disk, and one for the lower. These heads are moved across the surface of the disk in various amounts by a small stepper motor inside the disk drive. The motor moves the heads in and out across the disk, but the disk must be spinning to allow the heads to reach every part of their surface.

Before a disk can be read or written to, it needs to undergo a process known as 'formatting'. This divides a disk into smaller chunks (known as tracks and sectors) in the same way as a tape.

Unfortunately the formatting process reduces the storage capacity of a disk. Although Amiga disks are said to have an unformatted storage capacity of 100K, the amount of information that you can store on a disk depends upon a number of factors including the software controlling the drive, the precision of the stepper motor and the quality and size of the grooves on the surface of the disk, not to mention the directory structure and blocks reserved by the operating system.

Under Workbench 1.20, you can only store



between 654 and 660K on a disk. With Workbench 2.1, a new type of filing system was introduced called FFS (Fast File System), which enables you to store up to 800 K on a floppy disk.

When you save data into a disk, it is stored in a standard form known as AmigaGOS format (GOS stands for Operating System). Files saved in this way can be accessed and copied easily from Workbench. However, when games companies save data into a disk, they often save it in their own format which can't be accessed or copied without special knowledge and/or hardware.

When a piece of data is written to a disk, each bit begins at the start of a new sector and occupies as many complete sectors as it needs. Unfortunately, partly empty sectors can't have any other data stored in them and this can sometimes result in empty areas of a disk which are too small to write anything to, yet which between them can account for a substantial amount of wasted storage space (perhaps in excess of 50%). This process is known as fragmentation, and can be overcome by using a disk optimizer which rearranges the contents of the disk in a more efficient way.

None of this leaves any consideration any of the 'mode' of compression which can be performed on data before it is even stored on disk. These techniques can squeeze data so that it occupies as little as 40 per cent of its normal size, but that's another story...



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- 8. A high quality video limiter
- 9. A high quality video gate
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1003	£999



PC SIMULATOR

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As part of these hard drives you can connect your Amiga to a host computer via a serial or parallel port. This allows you to transfer data between the two systems.

Model	Price
1000	£699
1001	£799
1002	£899
1003	£999

LATE NIGHT HO

Brrrr. Bleep bleep bleep-ity-bleep. Whine whine whine. Are these sounds familiar? If they're not, maybe you should be considering buying yourself a Modem. If they're starting to be, let John Armitage show you how to get the best from your comms software.

It's late at night, but the land-line is still whining. Listen to the sweet howl as the modem changes pitch. Still as the Carrier Detect LED suddenly turns red and whines with delight as the system finally locks onto that host system which has been engaged for hours. Suddenly your computer is not alone, it's linked to the world. This is what Comms is all about.

Unfortunately, using the telephone network is not free, in fact it's not even particularly cheap. If you want to save money you need to restrict your time spent on-line, but that doesn't necessarily mean you have to make fewer calls. Instead, it means knowing your Comms software inside out, and making use of its money-saving options.

INCOMM

One of the best pieces of Comms software available is *INCOMM*, written by Tasha Lockberg and Daniel Bloch. *INCOMM* is shareware, which means if you like it and use it regularly, you should send some money to the programmers. In return, you'll receive a specially registered copy which will remove the annoying little requests which occasionally pop up. If all details are supplied in the documentation which comes on disk.

To get your copy, look through the ads in *C&A* (except to find your local PC store). Send off a cheque for a few quid, and within days you'll get it via through your letter box.

INCOMM can at first appear more than a little daunting, with more menus and requests than you can shake a very large stick at, but getting it going is really easy. Simply connect your modem, switch on the computer and boot with the *Workbench* and then pop in the *INCOMM* disk. Find and double-click on the *INCOMM* icon, and you're in business.

Probably the easiest way to see if a Comms program and modem are talking to each other is to enter a few AT commands by hand. The AT commands are part of the control language that practically every modem can accept and understand. For example, AT's will mean the modem to its default condition. If you type it on the keyboard, you should see the letter string back on the screen. The RX and TX lights should flash briefly on the modem, and when you press return you

This is original telephone line entry. Each disk has its own, customised and other relevant details explained here. If you receive a notice which means to ensure prompt time, here to ensure you supply the name.



ECP448 (5070) 10/10/91 10:10:10

HORROR



Access used to show a 2-MODEM transfer. This is always an indication of the state of your computer. The modem 2-MODEM will take care of the data, and the phone line will take care of the data.

should use OK option.

1. If this doesn't happen, check the following:
 - a. Is the modem patched on?
 - b. Is the cable properly connected?
 - c. Has another program running on the line? — such as a MIDI sequencer — taken up the serial port?
 - d. Is the baud rate set correctly?

To discover if it is the baud rate which is causing your troubles, you'll need to find the menu in Microsoft's COM1. The first sub-menu is called BAUD-RATE, and when you move the pointer onto it you'll see all the possible rates displayed. If a compatible rate — say 2400 — isn't selected, set one. The default baud rate is taken from the one set in your Workbench Prof's serial driver. Set this if you want the modem to work correctly every time you reset.

LET YOUR MODEM DO THE WALKING

Another of those AT commands mentioned in ATDT, which is the code for dialling. Most modems can operate left-to-right and pulse during exchanges. If you want to type ATDT the modem would use tones, which are faster but require a modem local exchange. If this is unacceptable, ATDT will suffice.

Typing ATDT123456 — and replacing the 123456 with your own telephone number — should hopefully result in your modem calling your own house. As you would expect, this should be engaged. If you don't hear the engaged tone, or your software doesn't report back there may be a problem with the connection between the modem and the telephone line.

Having to have numbers by hand in this way can be a real pain, so in conjunction with most software, ACComm has a telephone book option. The name, number and any special information relating to the system to be called are entered. Subsequent calls can be made by selecting the BBA by name from a menu. You must remember to save the telephone book information before you reset the program, or your details will be lost. If the filename is called ACCOMM phone, ACComm will automatically load the phone data when the program is first run.

INFORMATION EXCHANGE

The main purpose of any Comms program is to transfer information. There are two main ways of doing this: using text and using binary. When you first log onto a BBS, the text appearing on-screen and the text you type online, downloaded and to be transferred as plain ASCII text. Likewise when you enter a message, the text is sent character by character.

Sampling text by this method is extremely inefficient, unless you can type between 240 and 260 letters a second. A better way is to prepare your text files beforehand, and save them until you log in. All Comms programs have a text send and text receive option. To send a prepared text file from within ACComm use the Start ASCII Send option from the Transfer menu. A requester will appear for you to select your text file, and once you do it will set it at a much higher speed than you could normally type.

The Start ASCII Capture option will do the inverse — it will remember all the text that has been received, and store it on disk. In this way you can restore all the blumph that has been sent and may when you stepped out to the bathroom.

BIN IT

The second method of data transfer is to use binary information. Instead of the modem character set of letters and numbers, binary files are pure type options. Since this is exactly the same way that programs, pictures and sound samples are saved this is the method used to send all non-readable information.

There are several protocols of data transfer available, and they are given the exciting names of 2-MODEM, 2-MODEM and 2-MODEM. Other protocols such as Baudot are still used and work by doing, but should be transferred via 2-MODEM. This is a rather intelligent protocol, which can alter the packet size of data (how large the chunks) and depending on prevailing line noise, if 2-MODEM file transfer is interrupted, the Comms program can usually start from where it left off. This can save a lot of time if you accidentally lock the telephone from the wall, or someone picks up an extension phone and interferes into it.

With the Auto-download feature, ACComm will automatically begin a download when necessary. For

the maximum speed from 2-MODEM, most sites instruct software to request connection, if you use software I suggest you change it. I found to change the user's action.



JARGON BUSTERS

A block is a unit of data that is sent by a modem and is made up of large computer system instructions.

A Baudot is a hardware which controls your computer's serial port to the telephone line. Most have external flash memory to store the data that you want to send to a modem.

A 2-MODEM is a modem that can handle the transfer of data at 2400 baud.

JARGON BUSTERS

example, enter a BBS you may want to download a new demo file, so you select (F) from the BBS menu. ACComm recognizes the data sent by the BBS, and automatically starts the 2-MODEM download into the correct driver on your disk — in RAM, if necessary.

Basically, you should try to use 2-MODEM if you can. If it won't work out, you can try to use 2-MODEM if it doesn't support 2-MODEM and then why not.

ERROR

As every program has one thing in common — they all make errors. It is essential that a program is executed exactly as it was sent, for although you can probably guess that HELLO WORLD started its life as HELLO WORLD, if the same degree of corruption occurred to a program it would mean nothing when run.

The protocols use check sums to ensure that the previous block of data has no errors. If there is a mistake, the block is resent. In this way the data arrives with 100% accuracy at the other end of the telephone line, even if it has had to make several attempts in the process.

Modems will list the number of errors which have occurred during a transfer, along with a constantly updated estimation of the length of the transfer. To reiterate, the number of errors does not mean that the file has become corrupt, but that a number of blocks have had to be resent.

SQUEEZE

How do you reduce the amount of time it takes to send a binary file? If you want to send a full disk of programs using a modem operating at 2400 baud, it would take over an hour — even assuming a perfectly clear line.

This first way to reduce time is to search the files before they are sent. An archiving program such as ZIP, 2-DISK, UNZIP or LHA will reduce a file to a fraction of its size.

If you need to send an entire disk, rather than just a few files, you can use a disk imaging program to archive the contents of the disk into one file. This file can be transferred in the usual way, but whenever receiving, creates a copy of the master program to reproduce the disk.

The second way to save time is to buy a faster modem. Most systems will profit greatly if you use a 2400 baud modem, and send include better modems. I you can try anything better.

A 2400 baud modem can be bought now for about \$60, but it is possible to find the same cash to buy a 9600 baud. For about \$100, you can buy a modem which will send an entire full-disk image in about 15 minutes. If you plan to use it a lot, this saving will soon appear on your phone bill.

NEXT MONTH

Next month will return with a look at all the latest news. Plus, a roundup of the latest releases of existing modem boards.



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[illegible]

1. *Il primo capitolo è dedicato a...*
2. *Il secondo capitolo è dedicato a...*
3. *Il terzo capitolo è dedicato a...*
4. *Il quarto capitolo è dedicato a...*
5. *Il quinto capitolo è dedicato a...*
6. *Il sesto capitolo è dedicato a...*
7. *Il settimo capitolo è dedicato a...*
8. *Il ottavo capitolo è dedicato a...*
9. *Il nono capitolo è dedicato a...*
10. *Il decimo capitolo è dedicato a...*

- **What is the purpose of the assessment?**
- **What are the assessment objectives?**
- **What are the assessment criteria?**
- **What are the assessment methods?**
- **What are the assessment tools?**
- **What are the assessment results?**
- **What are the assessment feedbacks?**
- **What are the assessment improvements?**
- **What are the assessment challenges?**
- **What are the assessment opportunities?**
- **What are the assessment conclusions?**

[illegible]

1. *What is the main purpose of the passage?*

2. *Which of the following is NOT mentioned as a benefit of the program?*

3. *What is the author's attitude towards the program?*

4. *What is the main idea of the passage?*

5. *Which of the following is the best title for the passage?*

6. *What is the author's purpose in writing this passage?*

7. *What is the main point of the passage?*

8. *What is the author's opinion on the program?*

9. *What is the main message of the passage?*

10. *What is the author's conclusion about the program?*

11. *What is the main theme of the passage?*

12. *What is the author's main argument?*

13. *What is the main focus of the passage?*

14. *What is the author's main point?*

15. *What is the main purpose of the passage?*

16. *What is the author's main goal?*

17. *What is the main objective of the passage?*

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100. *What is the main purpose of the passage?*

1. **THE PROBLEM** The problem is to find a function $f(x)$ such that $f(x) = 0$ for all x in the domain of f . This is a trivial problem, and the solution is $f(x) = 0$.

2. **THE SOLUTION** The solution is $f(x) = 0$.

3. **THE CONCLUSION** The conclusion is that the function $f(x) = 0$ is the only function that satisfies the given conditions.

4. **THE REMARK** The remark is that the function $f(x) = 0$ is the only function that satisfies the given conditions.

5. **THE END** The end.

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1. **What is the main purpose of the passage?**
 (A) To describe the process of photosynthesis
 (B) To explain the importance of water in plant life
 (C) To discuss the role of chlorophyll in capturing light energy
 (D) To analyze the chemical reactions involved in cellular respiration

2. **According to the passage, which of the following is NOT a factor that affects the rate of photosynthesis?**
 (A) Light intensity
 (B) Temperature
 (C) Carbon dioxide concentration
 (D) Oxygen concentration

3. **The passage states that chlorophyll is responsible for capturing light energy. Which of the following best describes how chlorophyll captures light energy?**
 (A) By reflecting light waves
 (B) By absorbing light waves
 (C) By scattering light waves
 (D) By refracting light waves

4. **Which of the following is a product of the light-dependent reactions of photosynthesis?**
 (A) Glucose
 (B) Oxygen
 (C) ATP
 (D) NADPH

5. **The passage mentions that the Calvin cycle is the second stage of photosynthesis. What is the primary function of the Calvin cycle?**
 (A) To produce glucose from carbon dioxide and water
 (B) To convert light energy into chemical energy
 (C) To break down glucose into pyruvate
 (D) To synthesize amino acids from nitrate

1. **What is the purpose of the study?**
 2. **What are the research objectives?**
 3. **What is the research methodology?**
 4. **What are the results of the study?**
 5. **What are the conclusions of the study?**
 6. **What are the limitations of the study?**
 7. **What are the implications of the study?**
 8. **What are the future research directions?**
 9. **What are the contributions of the study?**
 10. **What are the key findings of the study?**

12. **What is the purpose of the study?**
 13. **What is the research question?**
 14. **What is the hypothesis?**
 15. **What is the significance of the study?**
 16. **What is the scope of the study?**
 17. **What is the methodology?**
 18. **What is the data collection method?**
 19. **What is the data analysis method?**
 20. **What is the conclusion?**
 21. **What are the limitations of the study?**
 22. **What are the future research directions?**
 23. **What is the overall summary?**

1. **What is the purpose of the study?**
The purpose of the study is to investigate the effect of the use of a mobile learning application on the learning outcomes of students in a distance education program.

2. **What is the research design?**
The research design is a quasi-experimental design with a pre-test and post-test.

3. **What are the variables?**
The independent variable is the use of a mobile learning application. The dependent variable is the learning outcomes of students.

4. **What is the sample?**
The sample consists of 40 students enrolled in a distance education program.

5. **What are the data collection methods?**
The data collection methods are a pre-test and a post-test.

6. **What are the results?**
The results show that the use of a mobile learning application has a positive effect on the learning outcomes of students.

7. **What are the conclusions?**
The conclusion is that the use of a mobile learning application is an effective method for improving the learning outcomes of students in a distance education program.

8. **What are the limitations?**
The limitations of the study are the small sample size and the lack of a control group.

9. **What are the implications?**
The implications of the study are that the use of a mobile learning application can be used as a tool for improving the learning outcomes of students in a distance education program.

10. **What are the future research directions?**
The future research directions are to conduct a larger study with a control group and to investigate the long-term effects of the use of a mobile learning application.

- 1. **What is the main purpose of the passage?**
- 2. **Which of the following is NOT mentioned as a benefit of the program?**
- 3. **The author's attitude towards the program is best described as:**
- 4. **Which of the following is the most likely reason for the program's success?**
- 5. **What is the author's primary concern in the passage?**
- 6. **Which of the following is the most accurate statement about the program?**
- 7. **The author suggests that the program is:**
- 8. **Which of the following is the most likely outcome of the program?**
- 9. **The author's main point is that:**
- 10. **Which of the following is the most appropriate title for the passage?**

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The collage consists of several overlapping newspaper clippings. The most prominent one is from 'The New York Times', dated 'Nov. 1, 1992', with the headline 'CLINTON WINS ELECTION' and a sub-headline 'BUT LEWINSKY SCANDAL LINGERS'. Other clippings include 'The Washington Post' with the headline 'CLINTON WINS ELECTION' and 'The Los Angeles Times' with the headline 'CLINTON WINS ELECTION'. The clippings are arranged in a way that suggests a timeline of events, with the 'New York Times' clipping being the most recent and the 'Los Angeles Times' clipping being the oldest.

1. *What is the purpose of the study?*
 2. *What are the research objectives?*
 3. *What is the research design?*
 4. *What is the sample size?*
 5. *What is the data collection method?*
 6. *What is the data analysis method?*
 7. *What are the results of the study?*
 8. *What are the conclusions of the study?*
 9. *What are the limitations of the study?*
 10. *What are the implications of the study?*

1. **What is the main purpose of the passage?**
 2. **Which of the following is NOT mentioned as a benefit of the program?**
 3. **What does the author think about the future of the program?**
 4. **What is the author's attitude towards the program?**
 5. **What is the main idea of the passage?**
 6. **What is the author's purpose in writing this passage?**
 7. **What is the author's opinion on the program?**
 8. **What is the author's main point?**
 9. **What is the author's conclusion?**
 10. **What is the author's recommendation?**

1. **THE FIRST PART OF THE BOOK** is a general introduction to the subject of the book, and is divided into two sections. The first section is a general introduction to the subject of the book, and the second section is a general introduction to the subject of the book.

[illegible]

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The screenshot shows a Windows 95 desktop environment. A spreadsheet application is open, displaying a bar chart with several bars of varying heights. The taskbar at the bottom shows the Start button and several open applications, including a file explorer and a command prompt. The desktop background is a light-colored, textured surface.

C FOR BEGINNERS

Let John Kennedy show you the way to programming heaven, in part five of his amazing C tutorial series.

PART
5

Especially when using higher than assembly level programming languages such as C, the importance of program design can be greater than the actual programming. One aspect of design which is becoming more important, as typified in the field of Software Engineering, is the concept of Data Structures.

By spending time right at the start of the design process selecting the manner in which a program will store and process information, much effort at the programming stage will be saved. (Programs become easier to understand which can only help the writing and debugging processes.)

This month we take an introductory look at the facilities provided by C to enable the programmer to develop a structured outlook on programs. We'll start with rather simple arrays, and move on to higher dimensions. Later we'll be looking at ways of defining your own custom structures, and also ways of naming them into arrays.

ARRAYS

When you grasp the benefits of using loops to perform a task rather than simply repeating the individual instructions, the concept of arrays always follows fairly easily.

Instead of declaring a variable to hold only one item of the desired type, it is possible to declare the variable to store a complete list of which each element is independently accessible.

Here's an example which should clarify that rather vague statement. Imagine that a database program must store 100 telephone numbers. The numbers are to be stored as integers, and not just any spaces or brackets - just [pure integers]. We subdivide the variables, as in TABLE 1.

There is nothing wrong with this approach - it works fine, and in some instances it may even be advantageous to use it. However, if the list was to be expanded to hold 100 numbers the program would quickly become full of arrays and lists. When editing and printing facilities need to be added, the program becomes full of arrays and lists. As you can probably predict, there is a much-better way to do things.

Instead of declaring 100 of 1000 separate variables, we can combine them all into one multi-cell variable, called an

TABLE 1

Example 1 - Telephone numbers "C"

```
main()
{
    int number1 = 123456;
    int number2 = 1234567;
    int number3 = 345678;
    /* etc */
    int number9 = 987654;
}
```

Instead of declaring 100 of 1000 separate variables, we can combine them all into one multi-cell variable, called an

TABLE 2

Example 2 - Telephone numbers "C"

```
main()
{
    int number[100];
}
```

array. TABLE 2 contains a good example. Before it is not, for this example actually reserves enough space for up to 100 different numbers. To access them separately, you include a number within square brackets after the name, as in TABLE 3.

As always there is a risk, and the risk is this: when accessing the individual elements of the array, you must remember to start with element number zero. In the example in TABLE 3, the number in the square brackets - called the index - must lie in the range 0 to 99. If you forget and access element number 100 (which doesn't exist) you could corrupt your program.

TABLE 3

Example 3 - Assigning array elements "C"

```
main()
{
    int number[100];

    /* assign some numbers at random */

    number[0] = 123456;
    number[10] = 1234567;
    number[90] = 123456;
    number[40] = 123456;
    number[60] = 123456;
    number[99] = 123456;
}
```

Take a look at the program in TABLE 4 - it prints out the 100 phone numbers, all with one printing function call.

You may need to revise the section we covered in the February issue on loops if you have forgotten how `for()` works.

HIGHER DIMENSIONS

For more complicated programs, it may be necessary to increase the number of indices used to access the array. In effect, we can add more and more dimensions to our array to store more and more data, as sometimes we don't have more storage just a better way of accessing it.

For example, in a chess program it usually

TABLE 4

Example 4 - Loops and Arrays "C"

```
main()
{
    int number[100];
    int counter;

    /* assume the elements are assigned in form */

    for (counter=0; counter<100; counter++)
    {
        printf("number %d is %d\n", counter, number[counter]);
    }

    /* board[64];
    /* there are only
    four squares */

    /* However, it
    helps calculation
    and later
    coding if we use
    a two dimensional
    array like this:

    int board[64];
    /* there are still
    only four squares */
    */
```

The second definition uses exactly the same amount of memory as the first, but it is probably easier to read. The second will print 100 lines of eight columns - just like a chess board. That's the key to successful programming, make your data structures as realistic as possible.

THE MEANING OF LIFE

Now, as an exercise in old the programming, let's take a look at a program that was popular several years ago, well before colour graphics and Macintosh. It was invented. It's called the Game of Life, and it was first produced in the 1950s by a man called John Conway, who wanted to model living cells.

His program uses a grid of cells, each of which can be alive or dead. From one generation to the next, whether or not a cell is born, live or dead is determined by some simple rules: 1. A cell remains alive if it is not surrounded (it has no more than three neighbours) and will live (only) less than two neighbours. 2. A cell will be born if it is surrounded by three parent cells.

These rules weren't made up on the spur of the moment, but were decided upon after much work. Other rules can be assumed, but these seem to give the most interesting results.

The program stores the state of the various cells

is an array called Grid. This array is actually three-dimensional, in that not only does it have rows and columns, but it has depth in the form of two layers. These layers are needed to implement the rules, for each cell is influenced by its neighbors over the entire layer simultaneously. If we used only one layer, and changed each cell according to its neighbors, then the neighbors of the changed cell wouldn't be influenced correctly. Therefore two grids are needed, and these are referred by the constants GRID0 and GRID1 in association with two variables, X and Y, to look at each cell in turn.

HIGH DEFINITION

But hold on, what's the Amiga stuff below magic spells -- as if that includes gibberish isn't bad enough... But Don't Panic -- the definition there for your benefit. It's just like a macroprocessor's find-and-replace feature, in that anywhere GRID0, GRID1 appears in the program, it is replaced with a 0, 1, because GRID0 is represented by 0 and GRID1 is replaced by 1. These substitutions are made before compilation even begins, by a special part of the C compiler called the pre-processor, so these instructions are not part of the C language, no time-criticals are needed to separate them -- they must be placed one per line. Although not compilers, it is the usual custom to use capitals with defines to make them stand out from normal variables. The Amiga's library files make extensive use of defines -- sometimes called Macros -- to simplify programs and add many named features.

Using macro definitions of "constants" like the size of the grid makes working with the programs so easier. If you need to make the 64x64 grid bigger or smaller, you need only alter the numbers following SIZEY and SIZEX -- there is no need to hunt through the program looking for all the numbers that need changing.

HOW IT WORKS

Now we have seen how the data structures work, it's time for the main program. Only three functions are needed: Grid, Display, Grid1. We start the initial pattern of cells. Display_Grid() also does the cells on-screen and Calculate_Grid1() performs the life-and-death decisions. After an initial call to Grid_Grid(), a small loop in the main() function calls Display_Grid(), and Calculate_Grid1() repeatedly. If you give the program to run more than 10 times, and the value in the last loop

Grid_Grid() uses a random number generator to decide upon the initial state of the grid. Depending on your C compiler, you may need to skip this line, as check your documentation. I've used the version of Random which comes with SASiLattice C 4.0. If the result comes to the point you might have to set individual cells with Grid_Grid(), Grid_Grid1()... Why? If a letter was program, a 1 means that a cell is alive, a zero means it is dead. This makes counting up the number of neighbors easy to do -- as long as you remember to subtract the middle cell. The new 0 and 1 loops scan the cells on either side of the cell at x,y making up a total, but in the course of the scan they will also include the cell at x,y. If it is alive, it must be removed from the total. Since it is dead it will contain a value of zero, we can subtract it any way on the all-chance.

After counting the neighbors, all we need to do is apply the two rules -- one for both and one for death. The first prevents the rules from changing the default condition is for the cell to survive to the next generation.

TRICKY BITS

OK, let's look at a host of some parts of the listing which could be considered as tricky. We've

already looked at the technique used to count up the number of neighbors belonging to a cell, but the decisions that follow may look a little complicated.

The Grid test is really quite simple, and doesn't even require special bits from the character. If a cell is numerically dead but the total number of its neighbors is three, then a cell will be born in the next generation. Remember we use the double equals sign for testing, and the single equals sign for assignment.

The second test is in two parts, and it's all to do with the modulo function. For the first condition to be met, the cell must be correctly alive. However, if either the number of neighbors exceeds 3, OR it is less than 2 the second condition is met. If both the first and second conditions are true (because there is an AND), the cell dies in the next generation.

In this function, extensive use of C shortcuts are used: ++, --, and --. As you'll know X++ is the same as X=X+1, X-- is the same as X=X-1, and X++ and X-- is the same as X=X+1.

ENHANCEMENTS

When you start playing with this program, you'll soon find a need to be able to accurately determine the initial cell pattern. Probably the easiest way to do this is with a program to read in an external grid of cells. Which will read in exactly into the handling -- the subject of next month's tutorial.

NEXT MONTH

Next month in your coding, starting C tutorial -- the joys of the handling, including how to save something from ASCII and save in images to whole arrays.

ARRAYS

- Arrays are variables which can store many similar types of data under one name. For example, int array[10].
- To access the contents of the array, you need to add an index value. For example, array[0].
- Arrays can have as many dimensions as required, although it is quite difficult to visualize dimensions higher than 3. For example, Chessboard[8][8] is OK, but Hypercube[4][4][4] is tricky.

LISTING

~~~~~  
C LIFE - THE COMPUTER GAME  
~~~~~

#include <stdio.h>
#include <stdlib.h>

/* The size of the grid - change this if
bigger or smaller versions */

#define SIZEX 64
#define SIZEY 64
#define GRID0 GRID0
#define GRID1 GRID1

~~~~~ Global variables ~~~~~

int generation; /\* generation counter \*/  
int gen;

```
void Calculate_Grid(void)
{
    /* Calculate new life */
    int x,y,i,total;

    for (y=1; y<SIZEY-1; y++)
        for (x=1; x<SIZEX-1; x++)
        {
            total=0;
            for (i=-1; i<1; i++)
                for (j=-1; j<1; j++)
                    total+=Grid0[x+i][y+j];

            /* Test for birth */
            if (total==3)
                Grid1[x][y]=1;
            /* Test for death */
            else if (total<2 || total>3)
                Grid1[x][y]=0;
        }
}
```

```
Grid(Grid0, Grid1)(x,y,z)
{
    /* update grid with new values */
    Grid(Grid0, Grid1)(x,y,z)=Grid0[x][y][z];
    Grid(Grid0, Grid1)(x,y,z)=Grid1[x][y][z];
    /* print C's alive */
    printf("C");
    /* print D's dead */
    printf("D");
    /* print my generation */
    printf("generation %d", generation);
}

/* Main program */
main()
{
    int count;
    int Grid0[SIZEX][SIZEY];
    int Grid1[SIZEX][SIZEY];
    /* Repeat process 10 times */
    for (count=0; count<10; count++)
    {
        Display_Grid();
        Calculate_Grid1();
    }
}

/* END */
```

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So you wanna  
be a games  
programmer,  
eh? In con-  
junction with  
this month's coverdisk,  
we're starting a new  
column to help you get  
the most out of AMOS!  
Dave Smithson shows  
you how.

# PART 1



# GAMES PROGRAMMING MADE EASY

**M**ost of us have dreamt of becoming games programmers at some time or another. If you're the whimsical, the life of the games program mer seems understandably attractive — colorful images of tanks, turtles, fast cars and the thought of getting paid to sit behind an Amiga all day seems just too good to be true. Unless you know where to start though, actually writing a game is a totally different ball game altogether.

European AMOS is certainly a step in the right direction, since its launch way back in 1985, AMOS has given the rest of us the tools to bring to life those game ideas that have been percolating for years. Programming the Amiga's hardware from assembly language is not a pastime for the faint hearted, but AMOS takes away all that heart ache by providing a comprehensive selection of commands and functions that makes the nitty gritty of writing games disappear. No longer do you have to understand memory, register lists and interrupts in order to write your own games. Because AMOS takes away all this drudgery, all you need is a few good ideas and a working knowledge of how games tick. With these foundations laid, you're well on your way to writing that MacGyver game that will shed you no ransom.

This, then, is the basic idea behind our new



AMOS column. We're not going to bore you with the basics of AMOS program ming — if you want to get up on the rest of it, then watch out for our 30-page AMOS supplement in one of the other hand you want new facts with no waffle, slide all the old source code and a few pointers here and there, then you've come to the right place. Over the coming months we'll be taking you step by step through everything you need to know in order to write games.

## POLISHED PERFORMED

Sounds great so far, but even now I can see that a few of you are starting to tremble at the thought of writing games, but it's really not as painful as you may expect. Although games may seem to be terribly complex beasts that require the programmer to have a degree in just about everything you'll get a spirit to appear on the screen, most games are actually not that complex once you understand how they work. Yes, even you *could* be a games programmer once you're armed with the right knowledge. A word of advice though — don't try to run before you can walk. Although we'd all love to write a game that would turn David Hudson green with envy, writing a game is like driving a car — although the theory is pretty much the same no matter what type of car you drive, putting a wheel before the wheel of a Lotus Elise would be fatal! Start by writing simple games and then work up to the more complex games once you feel confident enough.

Over the next few months we'll be taking a look at how games games work. In particular, we'll be writing our old Pac-Man clone complete with hundreds of ready-made, game files and gameplay games. It's always worth picking a game that has been around for a long time, because the standards of computer technology have improved so much over the years, you can bet that more of the early games were actually pretty simple because the programmers that wrote them didn't have a lot of computer power to work with. Defender is, perhaps, a more complex example, but games such as Space Invaders, Pac-Man and Frog are perfect material for polishing up your programming prowess.

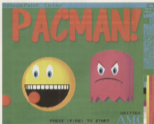
## TOOLS OF THE TRADE

So, what do you need to program games in AMOS? Well, obviously, you'll need some sort of the most important tools of the trade, namely a copy of AMOS and your Amiga, but you'll also need software to install in the following items.



If you want to program games but don't have the right tools for programming, then AMOS is the answer.





Although the AMOS-style graphics are pretty powerful based on DeluxePaint, you can make an AMOS file a reasonably high-quality design and other graphics work.



DeluxePaint can really do some AMOS, but the AMOS Compiler is a much more powerful tool for creating AMOS files.

## JARGON BUSTERS

- **Compiler** - A program which converts source code into a machine language that can be executed by the computer. Compiled code is faster than any interpreted language.
- **Loop** - A section of code that is repeated over and over again. A loop code is a section of code that is repeated over and over again.
- **Sprite** - A small object which is used to represent a character or object in a game. Sprites are used to represent characters and objects in a game.
- **Sound card** - This is the code which is used to generate sound. It is a section of code which is used to generate sound. It is a section of code which is used to generate sound.

as the Tracker, and then just fit directly into your program. I personally use a commercial Tracker called AudioTracker, but you can use any Tracker you can find (they're all pretty much the same).

- **A PEN AND PAPER** - If it's pen and paper! The little, over-games programmers need ancient tools such as the humble pen and paper! These indispensable items are just the ticket for designing sprites and for drafting out routines before committing them to code. Planning code is all important, so always have a pen and paper handy.

- **LOTS OF MEMORY** - If you're still using a 1MB (or less) Amiga, then it's strongly recommended that you get extra extra memory (2MB or the very least). Once you start pulling in lots of colorful sprites, pretty backgrounds and seriously rapid sound tracks, your source file will start to get pretty big.

- **LOTS OF COFFEE AND MUSIC** - Games programming is fairly hard, so always have the bottle topped up and a good supply of cat food at hand. As for the music, options are divided on what to test for (game programming). Although Jeff likes piano (the Lucas I personally recommend a copy of Deutsche Meister 'Violator' and their latest single, 'I Feel Four' (especially the remixes) (What about Kyle? - Just for it).

## LOOPING THE LOOP

Now that you've got the right tools for the job, let's get stuck into the serious task of getting started in games programming. First though, some theory: all games, regardless of whether you're coding a platform game, shoot 'em up or adventure are all based around pretty much the same theory. Like most programs, the core of a game consists of nothing more than a continuous loop. In the case of games software, the loop has a special name - the main game loop. If you've even sat in the back row of a games programming class and they start talking about the speed of the main game loop, you'll now know exactly what they're talking about!

Essentially the main game loop is performed, every aspect of the game is either checked or

updated. If for example, you were writing a Space Invaders clone, your main game loop might loop something like the example below. As you can see, the main game loop consists of basically two actions - decisions and processes. Decisions and processes are very different and it's important to understand the difference between them. When a process is encountered, it is performed everything regardless of what is going on within the game. A good example of this is the process of moving

## PSUEDOCODE

The following is an example of the type of decisions and processes a typical code would contain and how they are structured.

### Start of loop

Update position of alien  
Update position of player  
Move any of the alien fired bullets!

Generate random sprite

Has the player been killed?

Has the alien moved left?

Has the player's ship left the screen?

Has the alien moved right?

Has the player's ship right the screen?

Has the fire button been pressed?

Generate random sprite

Has any of the player's bullets collided with alien?

Remove alien sprite

Remove player sprite

Has the explosion been fired?

Has the player's ship been killed?

Has the alien's bullet collided with the player?

Remove player's sprite

Remove alien's sprite

Has the explosion been fired?

Has the player's ship been killed?

Has the alien's bullet collided with the player?

Remove player's sprite

Remove alien's sprite

Has the explosion been fired?

Has the player's ship been killed?

Has the alien's bullet collided with the player?

Remove player's sprite

Remove alien's sprite

Has the explosion been fired?

Has the player's ship been killed?

Has the alien's bullet collided with the player?

## NEXT MONTH

In the upcoming issue Dave Smithson will cover the first part of the actual source code for our AMOS version of Pacman. All the info you need to draw the screen, detect and move will be right there in good old CU Vision.

Per numero \_\_\_\_\_ Per attività \_\_\_\_\_



**Scissors in hand, Mat Broomfield is here to unravel another batch of readers' problems. Whatever the question he has the answer.**

## NEW OWNER, SAME OLD PROBLEMS



I own an A500 and I have quite a decent collection of open disk games and utilities which I would like to transfer, thus freeing some of the drives for other use. I just can't manage to get them from one disk onto another. I've spent hours trying to perform the task using my file and the reference manual. Also, from somewhere I'm using Workbench and can't do it. The time is too long I would cut, leaving me to read them each time I need it?

Finally, using the Workshop and the manual I've tried to set up a series of accounts using the system and file system. I managed to open new drawers and name them, but what on earth do you put in them? In the book it shows file sizes and text, but no description of how to input them.

I realise that these questions may seem pretty pathetic, but I'm fast becoming disillusioned. As a games machine, the A500 is a second to none. But as an interactive educational medium it's bloody frustrating!

Phil Newman, Brookville, Flushing

It's all too easy to develop misconceptions and get confused when learning to use a computer. However, I think that the biggest problem that you, and many people like you, seem to have, is your representation of the computer's manuals. To draw an analogy, what you do is to take up the instructions that come with it (I don't think you how to drive, nor do they tell you how to modify it to run on methane gas, or how to convert it into a hovercraft) why then, do people expect the Amiga manuals to teach them how to become programmers, or how to perform every task they've ever dreamed of? They're basic operating manuals designed to show you the most rudimentary functions of the computer.

I really can't over-emphasise the importance of buying some good tutorial books to expand your knowledge. Better yet, join a club or attend a forum who knows what he's doing.

Compiling disks can be one of the hardest things to do, especially for a beginner. Even

magazines employ professionals to do the job for them. However, you may be able to give it a go, but I have no intention of going into great detail in this column. I'll give you a clue about where to start, look up how to use the following magazines: **AMIGAFILE**, **COMPUTER DUPLICATE**, **GO**. You'll also need to know how to use the Shell, how to add a text editor, how to create a startup sequence, and how to load or create a script file. Mastering Amiga's **Magazines** and mastering AmigaDOS Volume 1, both from Bruce Horn, Brooks, will make a great starting point, but you can say goodbye to 104 if you're not! Contact 0958 at Spring Gap Green Business Centre, Lot Lane, Brookville, Meigs, AL23 5UG. Tel: 01833 864068.

It's not enough simple to set the clock, you also have to save the time that you set. The Amiga has two clocks; the system clock (which you have presumably set) and the battery backed clock (which you haven't). Once you've set the system clock, you need to open the Shell window and type **Setclock Save** anytime, to transfer your system time to the battery backed clock.

Good, if you have a 1.2TJ Amiga, it's possible that you don't even have a battery backed clock (which would be on your motherboard expansion board if you do have one).

As for your question about writing up accounts, you seem to have completely misunderstood the obvious purpose of files and drawers. Think of a drawer as being equivalent to a drawer in a filing cabinet. It has no information value on its own, it is simply a file receptacle. A file is like a specific document inside a filing cabinet. You don't buy a filing cabinet full of pre-written documents, and you don't create a cabinet full of pre-written files. If you create a picture with Deluxe Paint, or write a letter with a word processor, you can save the results in one of your drawers. Regardless of the type of information, your series are all stored as files, although you can label should you wish to give each file a unique name if you like. To create a file, you obviously need a piece of software that lets you create and save what ever it is you want. You mentioned accounts, and I don't know if that was simply a generic term, or if you're genuinely interested in accounts. If the latter applies, you'll have to find an accounting or spreadsheet program before you can set up any accounts.

## SLOW-WRITE SAVER



After reading the review of QuickWrite in the June edition of your mag, I purchased it for personal home use. The system is quick and easy to use except when I want to save a document. Each time I do, I get the message "Volume QuickWrite disk full" followed by DOS error 201.

What am I doing wrong? I've read all the manuals without success. I have a Workbench 1.3 1MB A500 with no extra disk drive.

How do I save documents on an extra disk? John Thompson, Whitton, Essex

Calm, please, please! You're not trying to save onto your original QuickWrite disk are you? Trying to save to your original program disk is a definite no, no. Not only do you expose your valuable program to the risk of virus infection, you also risk damaging it if there's a power cut while you are saving. You should save the original disk if possible, then put it away safely and only use the duplicate. Both

duplicate and original disks should remain virus-protected unless you go to tell otherwise to the program's instruction manual.

The message you're getting is telling you that the QuickWrite program disk is full. To save documents, first you'll need to format a blank one. You can do this from Workbench using the **INITDISK** or **FORMAT** options in the menu at the top of the screen. Refer to your Workbench manual for exact details on how to do this. Having formatted a disk use the **HEADDISK** option to call QuickWrite (or another program, if that's what you called your blank disk), then press return. Please note that the colon (:) after the title denotes that you are referring to a disk. The program will ask you to insert QuickWrite in any drive, so remove the QuickWrite program disk and insert your blank. The program will read the contents of the disk (Tempo), and display them in the file window. Click back in the last requester and type the name that you want to give your file. This time when you press return, the file will be saved.

Loading a file involves the same process, except that after the contents of your saved disk are displayed in the file window, you can load the file you want by simply double clicking on its name in the file window.

## CD ROM MUSINGS



I'm an A500 owner and am keen to get a CD-ROM drive for my computer. My father has used a few questions on the features and price of the CD-ROM and the CD-ROM drive for the Amiga, and I was wondering if you

could set the record straight once and for all?

1. I read in a magazine that the A575 is CD-ROM and in another it says CD-ROM. What's the real price?
2. When is the A575 for the A500/500+?
3. Will Commodore make the A575 a CD-ROM drive for the Amiga, and if not, why not?
4. Are Commodore's likely to enhance the A575 to the real low dollar level?
5. Is it possible to produce an identical version of the Great Gatsby on-up on the CD-ROM?
6. Finally, could you persuade my father that buying an A575 is a great idea in one reasonably short paragraph?

I hope that the answers to the above questions will clear up some confusion, and convince some people to go and enjoy one.

David Waller, Staines, West Yorkshire

1. You can buy an A575 for £399.99 from Gordon Homebits, Brixton, etc. They can buy you a standalone CD-ROM for a very reasonable £279.99! Call them on 0753 666761.

2. Commodore said that it would be out in time for Christmas (that's last Christmas - yes, he's).

3. The A575 is CD-ROM. It's slow with QuickWrite, but it's fast with other programs. It will work with ProDOS-8. Although these disks can be read, the technology hasn't been licensed from Kodak by CERN.

4. As for its style, Commodore are constantly upgrading their hardware, and someone of an opinion like yours is not going to get it any more specific, because I don't know.

5. No, I very much doubt it, but you can get

very close. I don't know the exact specs of the coin op, but I suspect it has more than half a dozen channels of sound, and animating those big sprites at a decent speed might cause problems. Anyway, who said the game was coming out on CD-ROM?

6. **Mr. Holes.** CDTV is rubbish, a waste of money, but for Gavvi's education, he'll be in prison within six months flat, just kidding. CD-ROM is a great idea, which has yet to be fully exploited. The value of this system is measured by the quality of its software, and in that regard it's losing value at the drop of the moment, and with Commodore's Christmas sales, and the recent price cuts, we could finally see a major upturn in the quality of software. Its strongest feature is probably its educational and family entertainment value. If you're considering this system, you should look very seriously at the CDTV (as opposed to the ROM drive).

## DRIVE INSTALLATION

I've recently bought mine and I'm disposed to believe that I haven't installed it hard drive. Why a hard drive game such as this don't provide for hard-drive installation, especially when their PC counterparts do? Is there any way around this problem?

David Burton, Ashbur, South Wales

I agree with you, it really annoys me when I pay good money for a strategy game only to discover that it won't install on hard drive. Other notable examples are *Revenant* which wastes on five disks and *Angels Between* three of them (almost non-usable). *Power Rangers* and *Utopia*.

I asked Gamla why *Chipsy Chaffy* isn't installable, and they said that it was to prevent piracy — a lame excuse. I can install *Phylo*, and that looks like times as much as any other. *Revenant* I installed, it just uses manual-based protection instead.

There is now a new type of pirate release sale purporting to be crash games so that they'll install on a hard drive. Come on software companies, piracy is 10 times as serious in the PC world, yet they get to load their stuff from hard drive!

## CHIPPY CHAFFY

In the *Memory Adaptations* article in your June issue, you mention a wire linked to the Gary chip. I've looked but I can't find it. Do you need this to connect Gary to Evolution Microchip? I am a 1.2 Amiga.

G. Tolman, Glasnevin, South Glamorgan

The wire is part of the modification that you can perform to upgrade a 1.2 Amiga to handle a meg in RAM (Chipsy Chaffy). The wire isn't attached to the computer when you buy it, you have to add it yourself if you want to perform the upgrade. Its absence won't affect the efficiency of the Megaboard.

## SCATTY SCART?

I noticed in September's *Ask* that you can perform to upgrade a 1.2 Amiga to handle a meg in RAM (Chipsy Chaffy). The wire isn't attached to the computer when you buy it, you have to add it yourself if you want to perform the upgrade. Its absence won't affect the efficiency of the Megaboard.

I really bought a LMS300 to connect my Amiga to my

Fidelity television. Whenever I use the computer the screen is about ten inches over to the left. I've tried using *MonitorPro* to centre the picture and I've looked inside the TV to see if there was some sort of centering control to be used.

So do I have the correct lead, or does the lead need the 'Jungle chip' that you mentioned? Jonathan Storey, Epsom Books, Tyne and Wear

The Jungle chip I referred to is not a separate component, you either get a SCART lead that has one, or you don't. In my experience there have only improved the display when I was either not there at all, or much too late. My instincts suggest that your problem is not due to the type of lead you're using, but to something else, although I'm powered if I know what. Anyone else able to help?

## MIDI MASTER AND SERVANT

A couple of months ago a reader wrote in asking about the possibility of mixing two Amigas together via MIDI interfaces so that one could act as a 'server' to the other, thus doubling the number of sample channels available for his compositions. At the time, you suggested that it was probably possible, but asked if anyone had already done it.

I have performed the operation, using *Chameleon*. There's no trouble connecting the two Amigas. All you have to do is ensure that the computer which it is to be the 'slave' has the external sync setting activated in *Chameleon*. This will then allow the controlling computer to start both programs playing simultaneously. I used *Garageband* on the Amiga, and *Protools* on the PC.

Thanks a lot Gavin. See, easy as pie!

## CG FONT UPDATE

I own Professional Page 2, and I have been using the Font Manager program supplied with it to convert a number of Adobe typefaces into Commodore format. At first everything went fine, with Professional Page's font list being updated automatically as I converted each font. However, now that my CG font directory contains several hundred files, Font Manager no longer seems to update the Page's font list, so I can't access the fonts from the program. I've tried using the CG update program, but to no avail.

I'm also experiencing another problem which may possibly be related. At first Font Manager seemed to convert every font I threw at it, but now it occasionally freezes halfway through a conversion without completing the required processes. My matter how long I leave the program for, the conversion remains permanently locked up.

Mervyn Laine, Cambridge

I contacted Gaudi Disk about this, and they reluctantly admitted that there were restrictions with many versions of Font Manager, not least of which being the fact that it will only update a CG font directory containing less than 255 fonts (768, actually). I encountered similar problems at a much lower figure than that. Fortunately, there is a simple solution.

In the 'B' directory you will find a file called *fontmgr-ppg* which is used to test Professional Page exactly which fonts are available in the CG font directory. All you need to do is add the offending fonts to that file and the fontmgr-ppg will then be able to

test each font as it is or Cyprian, and add the names of the missing fonts.

This solution will also work for Professional Page, except that the file *fontmgr-ppg* is in a different format.

As for your problem with the program locking up, there are two likely causes:

1. The font has too many characters. Commodore fonts may only have a certain number of composite parts and if you try to convert a font which exceeds that number you'll either get a badly converted, or no conversion at all.
2. The font is not in the correct type. At the moment Font Manager only converts Adobe Type 1 fonts. However, if you're using the program is almost certain to identify fonts of the wrong format before it even tries to convert them.

## AMSTRAD DMF 2160

Four years ago in my *Soundbytes* I invited myself to an Amstrad DMF 2160 press which resulted in it. I recently tried using it on my Amiga and was happy with the results using most processors. Boris and MikeCAD but was disappointed when it came to D-Paint. All it prints are quarter marks and numbers. Could you please tell me what the correct DMF patch settings are for D-Paint, and what printer driver is needed? Doug Leveridge, Haverhill, Suffolk

Before I answer your main question, I must just point out that you don't generally use different drivers for different processors, in *D-Paint* for *D-Paint*, *NEC* for word processing, etc. Once you've set up the correct driver, you can use exactly the same one for virtually every program you use. Printing graphics is one of the hardest things you can ask a driver to do, so when setting up your printer, always try to get a working *dmf* patch, then you can be confident that it'll work with everything else.

Anyway, your answer comes in via thanks to it Woodhead and Tim Hargrave who sent in information about their printer set-up last May. Thanks guys.

From the *DMF* Database:

| Bank 1 |    | Bank 2 |    |
|--------|----|--------|----|
| off    | on | off    | on |
| 1      | 2  | 1      | 2  |
| 3      | 4  | 3      | 4  |
| 5      | 6  | 5      | 6  |
| 7      | 8  | 7      | 8  |
| 9      | 10 | 9      | 10 |

According to both readers, you should use an *Amiga-S* kind driver.

## WHICH WORD PROCESSOR?

I have become the new owner of an Amiga Computer. I have a 1000MHz monitor and a 500MHz Multisync which I purchased as a family Christmas present.

Although I can type, I am a computer beginner. I want to use the Amiga as a word processor to replace my 18 year-old electric typewriter. Can you recommend any particular software titles?

Where is the best place to buy the software.





# BACKCHAT

Here to answer another bulging mailbag of insults, innuendo and, horror of horrors, even a few compliments is the one, the only (thank god), Nick Veitch. Take it away...

## BIT OF A PROBLEM

I am the owner of an Amiga 500 and have noticed the release of a new 32 GB Amiga 1200. I would like to know if there is any possibility to make my 500 into a nice 32-bit 1200?

Robbie Payne, Newcastle-upon-Tyne

Robb: Well, for a start you should have addressed your question to G&A, and not to me. No. Not. Please...

## UPGRADE PATH

Having recently upgraded to a CDTV I have a number of questions concerning the future of this machine.

(1) Given that CDS only cost a pound to produce is there any chance of seeing huge games (like Monkey Island) being put on CDS at a reasonable price?

## INSIDE INFORMATION

It can now be revealed: Since this, the issue before G&A and G&A 2012 have looked. Amazingly, the new magazine for the most addictive ever can be the whole of what is ahead. Not only that but it can't wait to be the game ahead. It's only coming up with G&A off other others here, also. Just looking into being in your game.

(2) Could you review Sherlock Holmes Consulting Detective as I would like to buy it?

(3) I was informed by my dealer that an MP30 cartridge will be available soon, allowing me to see real time full motion video on the CDTV, and that version five would become available for it.

Also, have you ever considered that many people (myself) who are looking for an Amiga 1200 or 1200S and a Magazine?

L. Paquin, Gwent

Given that the development time for Monkey remains a constant across all versions, if it makes it to CDS it will probably not be a bargain, given it'll be about 15 times the price. As for an MP30 cartridge, yes it will enable the CDTV to play HAV, but whether that means it will be produced, and whether it is supported by developers and whether Commodore license the technology to enable you to view time on CDS - it will take up to a whole lot of questions. Certainly its popular belief I am not positive, just incredibly intelligent, so I can't say what will happen.

The signs are that Commodore are very

keen on developing a viable CDS multimedia engine, which will play Amiga games and do everything a CDS will do, but you may find that the CDTV will not be compatible with the dream machine when it arrives.

It is interesting that you and so many of your friends have Amiga and computers - are you all exceptionally rich?

And the next contender please...

## BOTTOMS UP

Please explain to my friends and parents that the Amiga is far more advanced than the PC is everything relating to graphics and sound.

By the way do you know that in Portugal, C&A Amiga means 'Am Amiga'?

Bruno Pereira and Jean Miguel, Portugal

Well, I tell you what, rather than starting the Amiga vs. PC debate again, perhaps you could just cut out some second letter in backchat from the last six months of the magazine and redecorate your house with them.

As for the mag's name in Portuguese, it's not as bad as the reputation the via 30 got in Germany... Come in number 4...

## FREAK OUT

More games are loaded on the A2000 if you change the boot options. Try holding down both mouse buttons and pressing C/PS/ctrl/C/FF and/or/ctrl/ctrl/ctrl from the relevant screen. Stick C/FF 2 down on the players, or vice versa. Streetfighter 2 G&A, Gwent

A/2000 owners should note that the boot menu

## TEAM TALK

Want to know what the C&A Amiga team have been up to this month? We didn't think so either, but we've a space to fill and just had some lovely new photos taken, so here you are anyway!

### DAN 'ARROU' SLINGSBY

Our super-fit lad has just arrived at the local health club to start getting in shape for his summer holidays. It's going to be a long hard struggle, though, as the only exercise he's undertaken in recent times is a quick dash over to the photocopier and a regular work-out with a pint glass at the City Frolic. I mean, he even gets head coaching every 40th keyboard! Dan's also recently moved - trouble is, he chose to make his new home above is Kentucky Fried Chicken and now attends weekly meetings of the chicken barbers. Still, this is a definite improvement, so no one's complaining too badly. Meanwhile, our Business Unit is fighting his way through Team 17's excellent early show and having a blast with Shockwave After Desert Strike conversion.



### JOH 'DEATH NINJA' SLOAN

The man with the incredible resemblance to a chimpanzee has certainly been busy this month. He's up with Dan's club, start sparring has been decided to fight back - literally. Having spent his youth in a distant western temple, Joh has developed unearthly fighting skills for his tribe, which usually involve smashing his fist repeatedly into a wall while muttering that the gods no pain to fight. He has just gained his second dan belt in judo. On a more gentle note, Joh has been seen giving his skills on bloody Borneo and trying to remember where he was in US Coast's flashback.



### TONY 'CHIPS' HORGAN

The show business talent has been having a little bad luck of late. In the search for the perfect role he was recently spotted on a freezing cold morning shivering around the Elephant in Castle, Dingle. The reputation that this place has as London's answer to Boney, Tony was prepared to face the cold and danger to be the party. In the end of course as might as the promise of a party turned out to be a wind up. This time last Tony has finally ditched his love of leather boots - we have to believe in his deal all day to stop him breaking off into the back room for a quick competition. When he's not working on his lyrics, Tony can be found rocking his hair back for a solution to Lemmings 2 and leading Dan at Body Bump.



**THE**

implicated in some  
machines. This is what  
happened to the  
Spectrum when the  
128K Spectrum came out.  
And finally, I hope  
you lot in London enjoy  
all the great computers  
shows that you get to go  
to. I did not like to sound  
bitter but there is  
Northern Ireland and we  
are not invited to anything  
at all. How I wish to live





## 157



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